

# Mathematics




## Module 5



Distance  
Learning



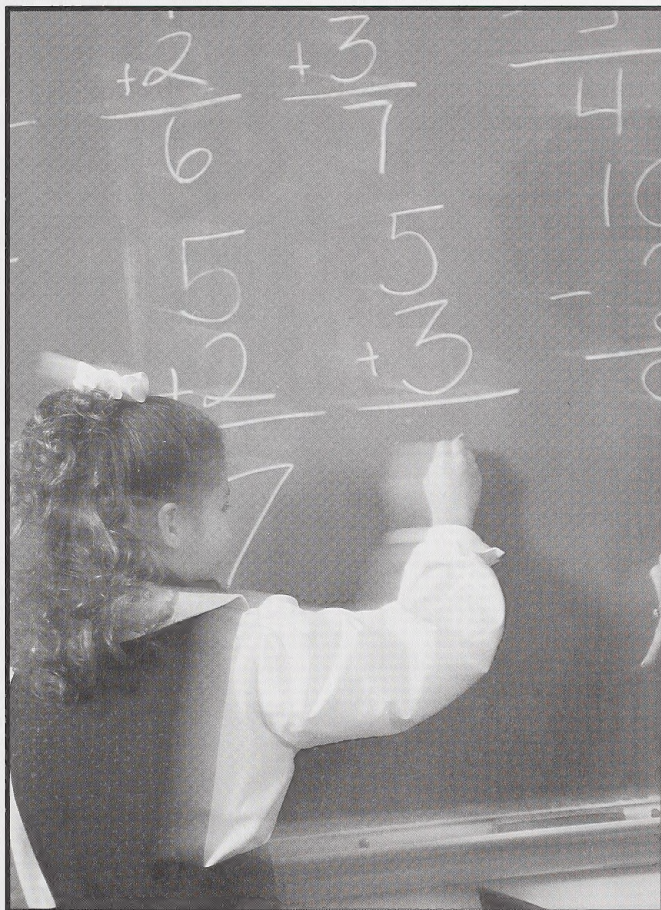


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# Mathematics

## Module 5



**Distance  
Learning**



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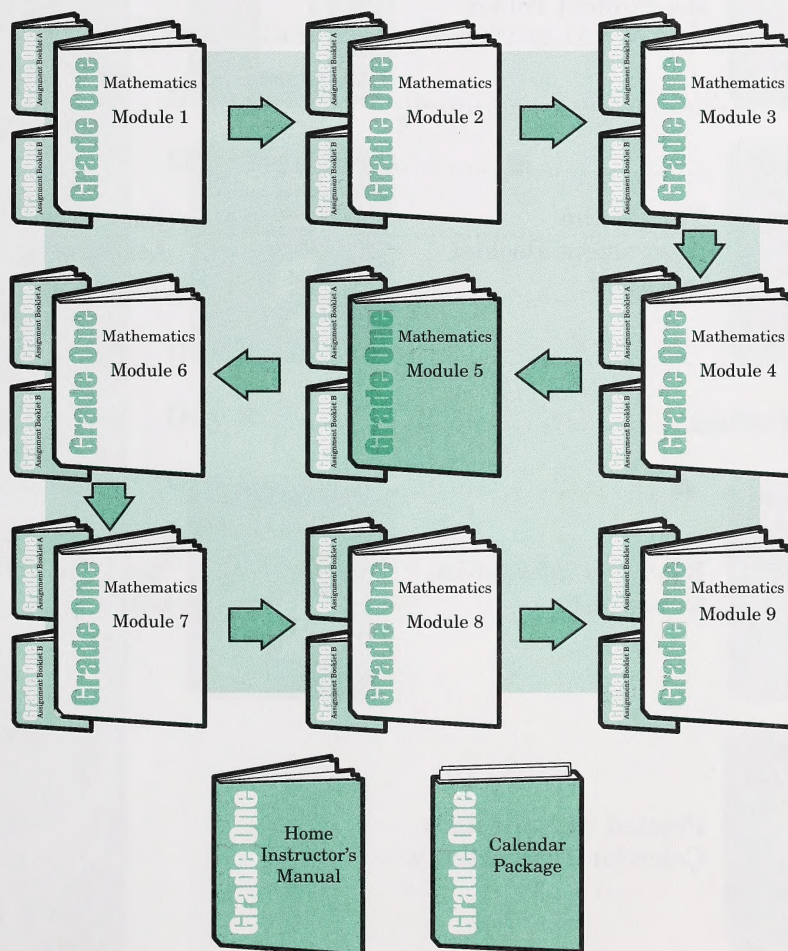


## Course Overview and Basic Components

Welcome to the Grade One Mathematics program.

The booklet you are presently reading is called a Student Module Booklet. It will take you through the course and show you, step by step, what to do with the student and how to do it. The activities you do will prepare the student for the assignments.

Grade One Mathematics contains nine modules. Each module has two Assignment Booklets. The module you are working on is highlighted in a darker colour. The two other basic course components—a Home Instructor's Manual and a Calendar Package—are also highlighted.

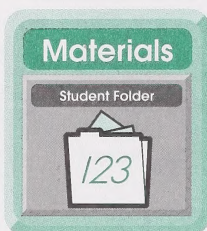




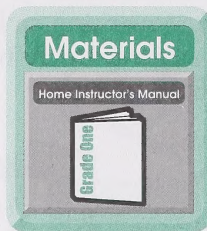
## Visual Cues

Throughout the Grade One Mathematics program, you will find visual cues that indicate a material needed or an activity to carry out. Read the following explanations to discover what each icon prompts you to do.

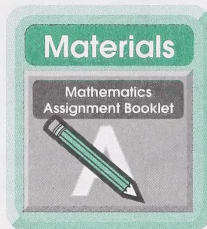
### Icons: Materials



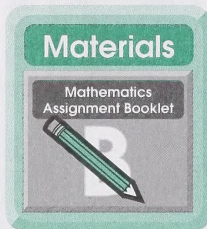
Place an item in the Student Folder.



Turn to the Home Instructor's Manual for further information.



Turn to the Assignment Booklet indicated.

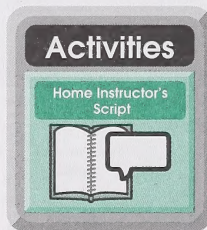


Turn to the Assignment Booklet indicated.

### Icons: Activities



Read this information to yourself.



Read this information with the student.



Proceed with the daily Calendar Time activity.



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# Mathematics

## Module 5 Overview

Welcome to Grade One Mathematics Module 5.

This module begins with the study of addition and subtraction facts to nine and then moves on to the facts to ten. Your student will continue to develop an awareness of real-world settings for the operations of addition and subtraction, the models and properties of each operation, and the meanings of these operations.

Next, your student will study geometric solids and shapes. Children live in a three-dimensional world, alongside the flat, two-dimensional world of pictures. Your student will explore this personal world in a geometric sense.

The study of geometric properties emphasizes some goals of geometry, such as describing and classifying, constructing, exploring and discovering, and relating three-dimensional solids to two-dimensional shapes.

Finally, the student will describe the relative position of two- and three-dimensional objects using words such as near, far, left, and right. The student will also match size and shape of figures by superimposing them.

Each day's lesson has four main elements. All four are important parts of the program.

- Developing the Concept
- Applying the Concept
- Enrichment
- Assignments

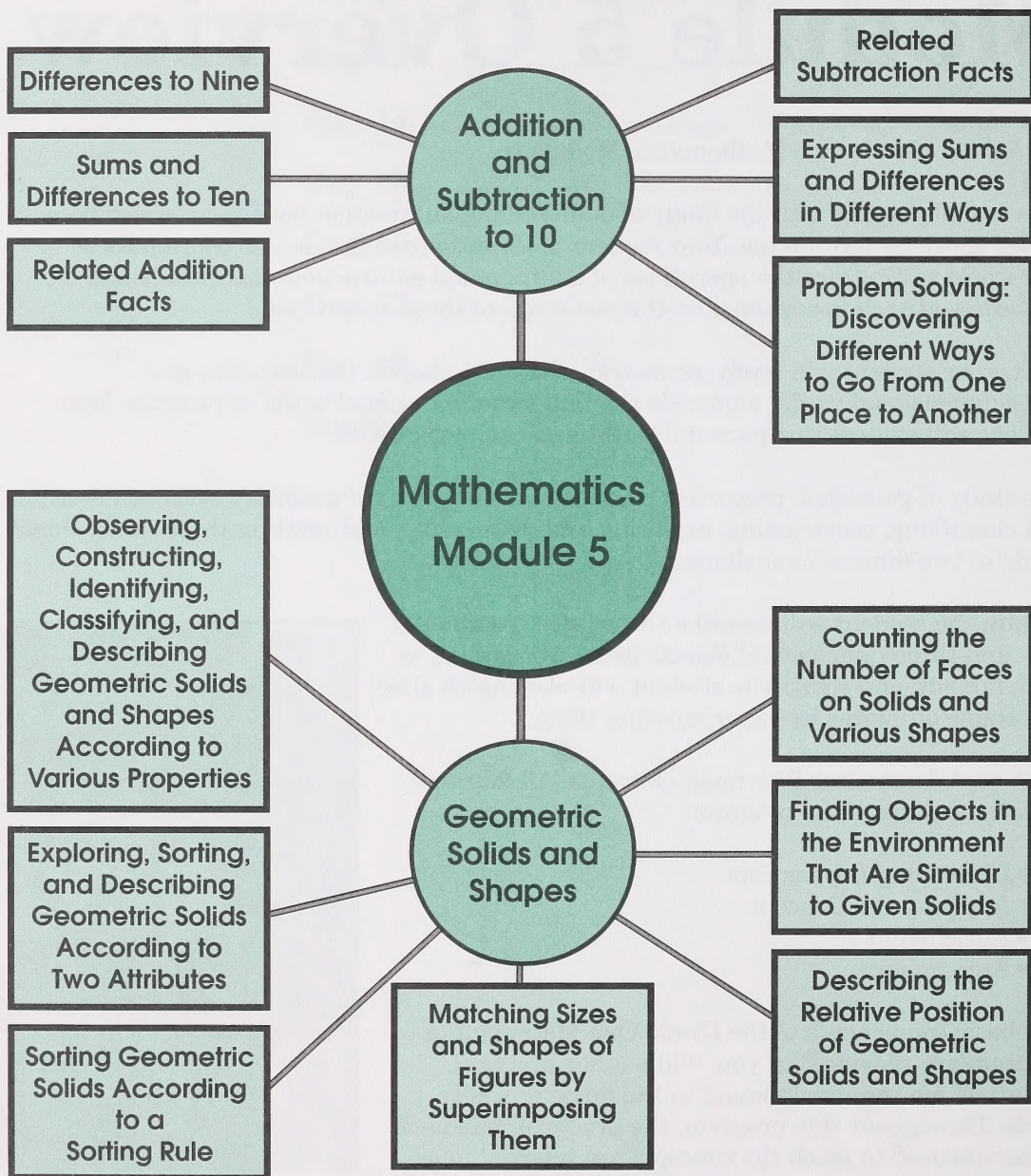
The basic components of the Grade One Mathematics program are provided for you, while other practical materials are commonly found in the home or easily made. Throughout this program, the practical, hands-on materials used to teach the concepts are referred to as *manipulatives*.





## Module Web Chart

This chart highlights the main mathematical topics for Module 5.





## Mathematics Module Submissions

### Materials

Student Folder



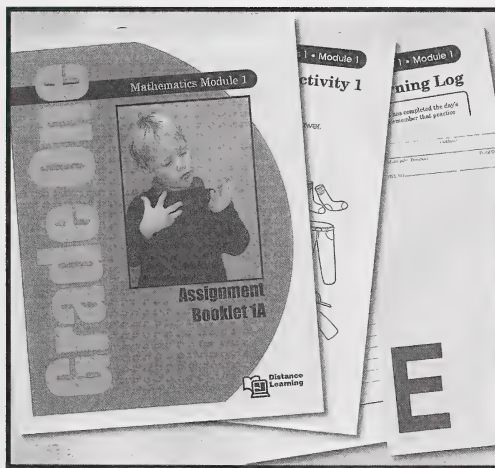
Place completed items in the Student Folder when you see this icon. On Day 9 and Day 18 of each module, you will find a checklist in the Assignment Booklet to help you compile items for submission to the child's teacher. The teacher will let you know when to provide these items for marking.

### Materials

Home Instructor's Manual



**Note:** The Student Folder is not included with the basic course components. Refer to the Home Instructor's Manual for information on the Student Folder.



## Calendar Time

### Activities

Calendar Time



Many essential concepts are learned through the calendar activities that begin each lesson. If your student is not enrolled in the accompanying Grade One Thematic program, refer to the Calendar Package for information, activities, and resources.



## Additional Resources

The basic mathematics resources that the student needs for this module are provided. You could extend these basic resources with additional ones from a public or school library. Listed below are concept-related books, songs, and rhymes that could enrich this module. A trip to the library in search of these resources may be a delightful beginning to your module. In addition, you could investigate the many games and computer programs on the market that may enhance your student's learning opportunities.

### Number Concepts and Operations Resources

#### Books

##### Addition Books

- Anno, Mitsumasa. *Anno's Counting Book*. 1986.  
Browne, Eileen. *Funny Animals Numbers*. 1986.  
Burningham, John. *Pigs Plus*. 1983.  
Carle, Eric. *The Rooster Who Set Out to See the World*. 1972.  
De Brunhoff, Laurent. *Babar's Counting Book*. 1986.  
Galdone, Paul. *Henny Penny*. 1968.  
Hawkins, Colin. *Adding Animals*. 1983.  
Lapp, Eleanor. *Duane, The Collector*. 1976.  
Melville, Heather. *Four Pigs and a Bee*. 1974.  
Tolstoy, Alexei. *The Great Big Enormous Turnip*.

##### Calculator Books

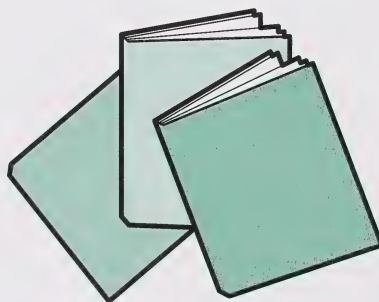
- Adler, David A. *Calculator Fun*. 1981.  
Bitter, Gary G. and Metos, Thomas H. *Exploring with Pocket Calculators*. 1977.  
Catherall, Ed. *Investigating Calculators*. 1984.  
Darke, Marjorie. *Imp*. 1985.  
Lewis, John. *The Usborne Pocket Calculator Book*. 1982. 1968.

#### Songs and Rhymes

- "Five Little Ducks"  
"Five Little Frogs"  
"Five Little Monkeys"  
"Five Little Pumpkins"  
"Four Hugs a Day"—Charlotte Diamond  
"Let's Do the Numbers Rumba"  
"Old John Braddle-um"  
"Once I Caught a Fish Alive"  
"One Man Went to Mow"

##### Subtraction Books

- Burningham, John. *Mr. Gumpy's Outing*. 1984.  
Burningham, John. *Ride Off: Learning Subtraction*. 1983.  
Christelow, Eileen. *Five Little Monkeys Jumping on the Bed*. 1989.  
Hawkins, Colin. *Take Away Monsters*. 1984.  
Hooper, Meredith. *Seven Eggs*. 1985.  
Mathews, Louise. *The Great Take-Away*. 1980.



- "One Potato, Two Potato"  
"One, Two, Buckle My Shoe"  
"One, Two, Three, Four, Five"  
"Over in the Meadow"  
"10 Crunchy Carrots"—Charlotte Diamond  
"Ten Little Kittens"  
"There Were Ten in a Bed"  
"This Old Man"

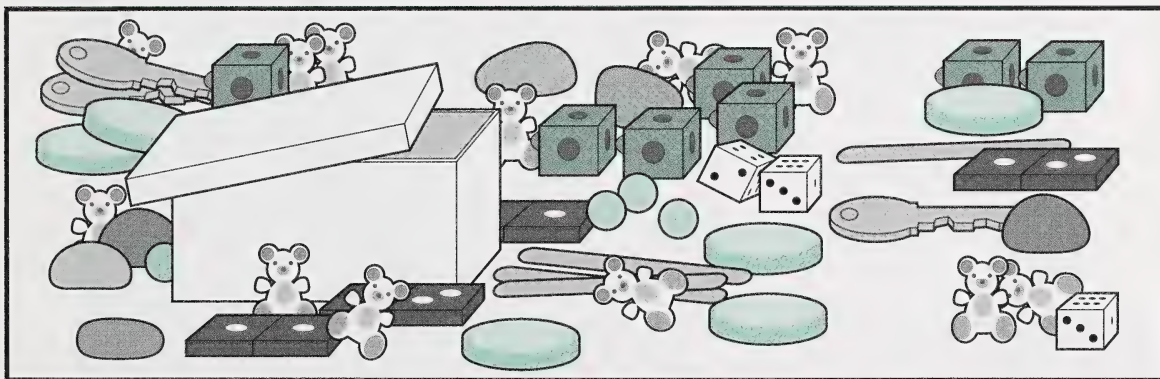


## Geometric Solids and Shapes Concept Resources

### Books

- Atwood, Ann. *The Little Circle*. 1967.  
 Barrett, P. and S. *The Circle Sarah Drew*. 1973.  
 Barrett, P. and S. *The Line Sophie Drew*. 1973.  
 Barrett, P. and S. *The Square Ben Drew*. 1973.  
 Chevalier, Christa. *Spence Makes Circles*.  
 Craig, M. Jean. *Boxes*. 1964.  
 Epstein, Sam and Beryl. *Who Needs Holes?* 1970.  
 Fisher, Leonard Everett. *Look Around: A Book About Shapes*. 1987.  
 Hoban, Tana. *Circles, Triangles, and Squares*. 1974.  
 Hoban, Tana. *Shapes, Shapes, Shapes*. 1986.  
 Hoban, Tana. *Shapes and Things*. 1970.  
 Hutchins, Pat. *Changes, Changes*. 1971.  
 Keats, Ezra Jack. *Regards to the Man in the Moon*. 1987.  
 Pienkowski, Jan. *Shapes*. 1973.  
 Reiss, John. *Shapes*. 1974.  
 Seuss, Dr. *The Shape of Me and Other Stuff*. 1973.  
 Van Leeuwen, Jean. *Too Hot for Ice Cream*. 1974.  
 Wynne-Jones, Tim. *Architect of the Moon*. 1988.

## Number Operations Manipulatives (Addition and Subtraction)



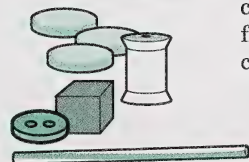
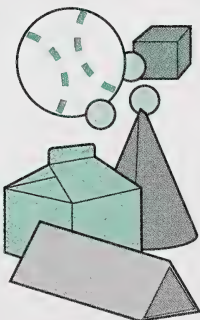
## Geometric Solids and Shapes Concept Manipulatives

### Spheres

marbles  
 nuts  
 oranges  
 beads  
 gum balls  
 golf balls  
 table-tennis balls  
 softballs  
 tennis balls

### Cones

funnels  
 Bugles snack  
 ice cream cones  
 party hats  
 some paper cups  
 some coffee filters

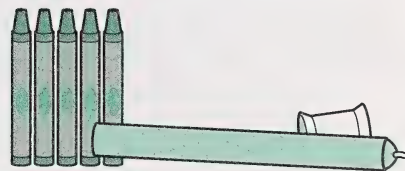
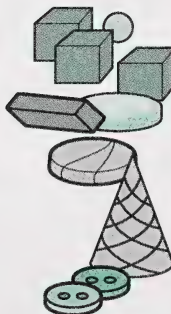


### Cubes

beads  
 cream cartons  
 caramels  
 dice  
 alphabet blocks

### Rectangular Prisms

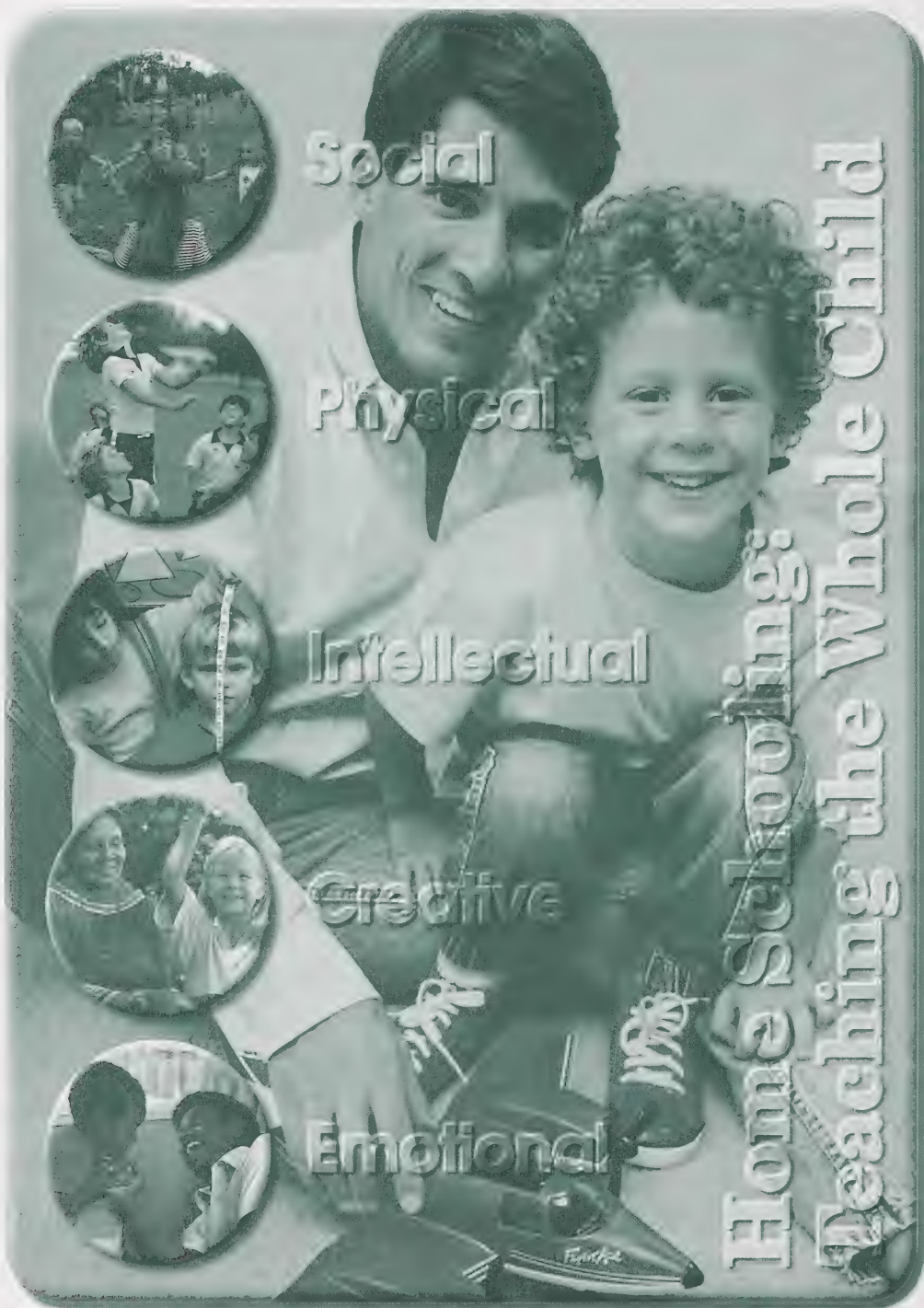
dominoes  
 milk cartons  
 lunch boxes  
 cereal boxes  
 cookie boxes  
 frozen-food boxes  
 cosmetics boxes



### Cylinders

spools  
 beads  
 pop cans  
 checkers  
 corks  
 straws  
 candles  
 pencils/crayons  
 paper-towel cores  
 coffee cans  
 film containers





# Day 1



## Calendar Time

**Time recommended: 30 minutes**

Thirty minutes of Calendar Time is required if the child needs to make a new personal calendar. If your student's personal calendar is still current, you will need only about ten minutes for Calendar Time activities.

For further information on Calendar Time, refer to the Calendar Package.

## Focus for Today

**Time recommended: 45 minutes**

- differences to nine





## Vocabulary (spoken only)

Look for the following words throughout today's lesson. These words are usually used in context and, if introduced to the student, are spoken only, so it is not necessary to review the list with the child. Students at this level are not required to read, spell, or write these words, with the exception of the number words from zero to ten.

minus  
subtract

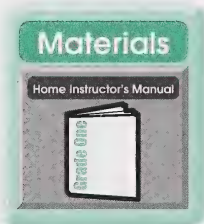
take away  
centre

tenth  
estimate

calculate

## Materials Required

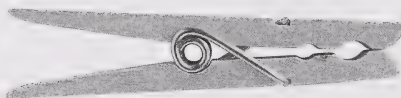
Certain materials are required on a regular basis throughout the Grade One program. These are the basic school supplies, such as pencils, paper, glue, and scissors. If your student is not registered in the accompanying Grade One Thematic program, then prepare a box containing these materials for your use during the Grade One Mathematics program.



See the Home Instructor's Manual for further information on the Master List of Required Materials.

- box containing required materials from the master list
- one plate and ten marbles
- nine clothespins and two hangers
- one to nine number cards. (Make a number nine card today.)
- toothpicks or suitable substitutes (optional)
- one die (optional)
- small plastic container with a lid (optional)
- raisins, candies, dry cereal, or other small edibles (optional)

Keep reusable materials for future activities. Plastic tubs or large paper envelopes (new or used) are convenient containers for this purpose. Label containers with the names of their contents.



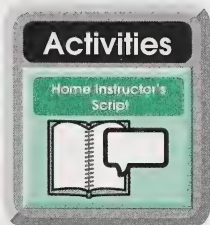


## Developing the Concept

### Marble Subtraction

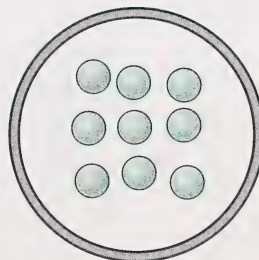
Today, your student will use manipulatives to resume the study of subtraction. You can continue to use the terms **minus**, **subtract**, and **take away** interchangeably during this study.

Begin by having your student trace a circular dinner plate on an unlined sheet of paper. Have the child cut out the circle and remove ten marbles from a container filled with marbles. Then use the following script.



We will play a special game of marbles.

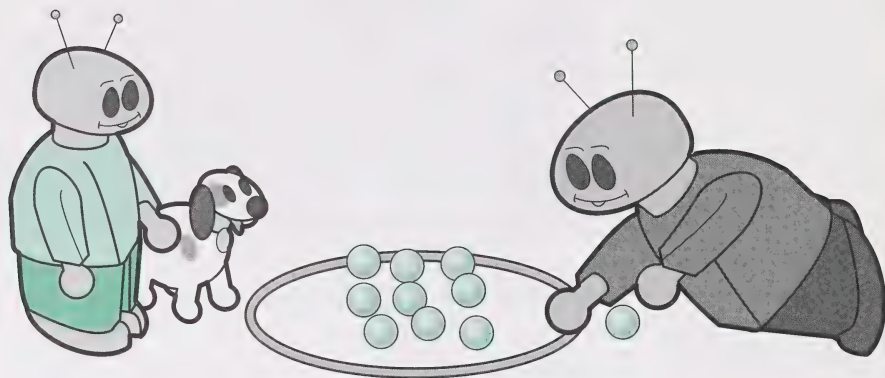
The goal of this game is to knock out as many marbles from the **centre** of the circle as possible.





First, put 9 marbles in the **centre** of the circle.

Then use the **tenth** marble to knock out as many marbles as you can. Model for the child how to shoot marbles.

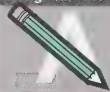


Keep shooting until you have knocked out all of the marbles in the centre.

Print a subtraction number sentence for each set of marbles that you knock out of the circle.

### Materials

Mathematics  
Assignment Booklet

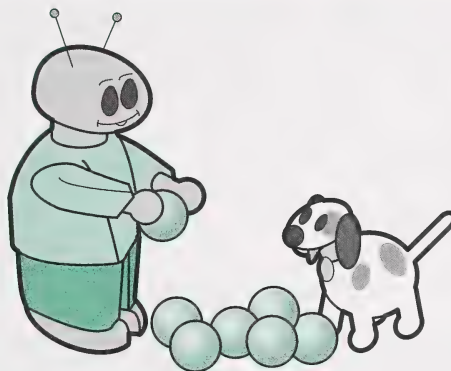


Turn to Mathematics Assignment Booklet 5A, and follow the directions to do Day 1: Assignment 1. Use the following script to guide the student.

You have 9 marbles. If you knock out a set of 2 marbles, your subtraction sentence would be  $9 - 2 = 7$ .

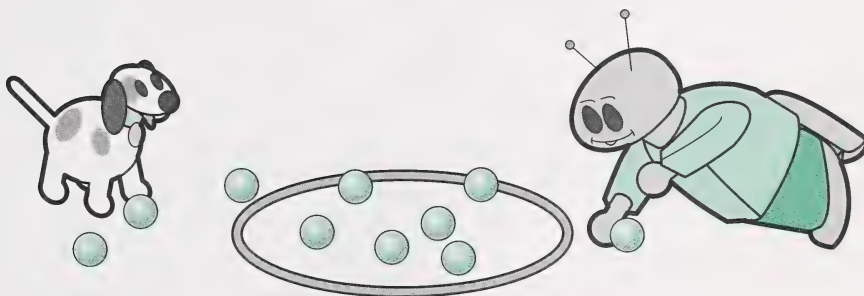
Then you would have 7 marbles. If you knock out 3 of them, your next subtraction sentence would be  $7 - 3 = 4$ .





Complete the chart by having the student do the following:

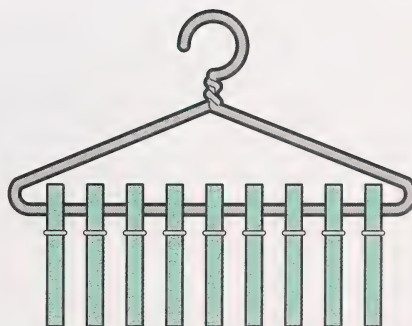
- place a specific set of marbles in the centre of the circle
- knock out different numbers of marbles
- construct a subtraction number sentence for each try
- place a different set of marbles when the circle empties



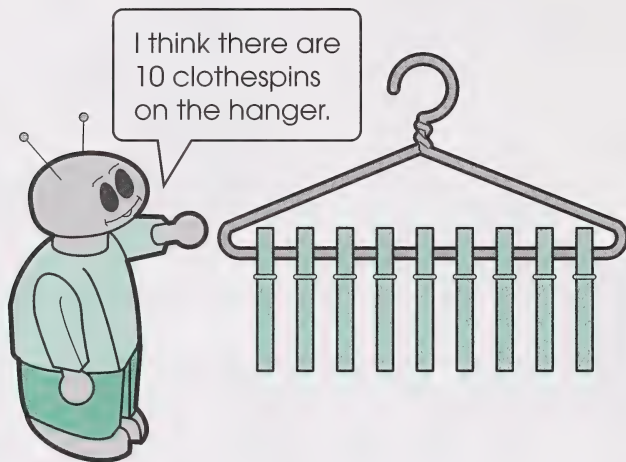
## Applying the Concept

### What's My Subtraction Sentence?

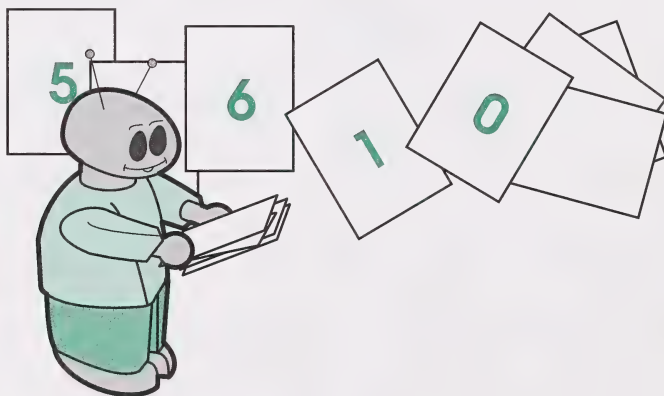
**Step 1:** Clip nine clothespins to a hanger, and hang it from a suitable spot at the student's eye level. Hang a second empty hanger nearby.



**Step 2:** Have the student **estimate** how many clothespins are on the hanger and then count them. Discuss the difference between the estimate and the actual count, if any.

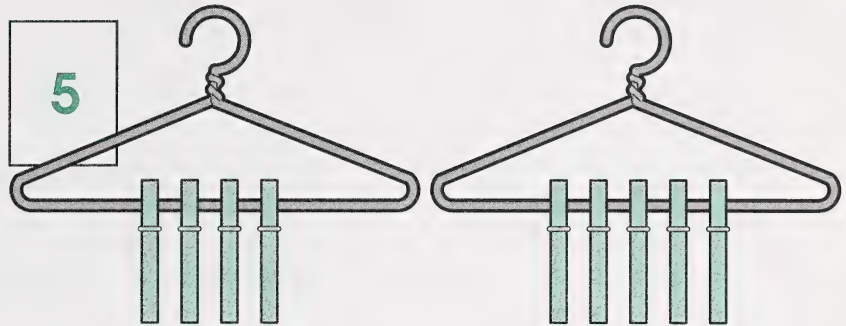


**Step 3:** Shuffle the number cards, and place them in a pile, face down on the table.

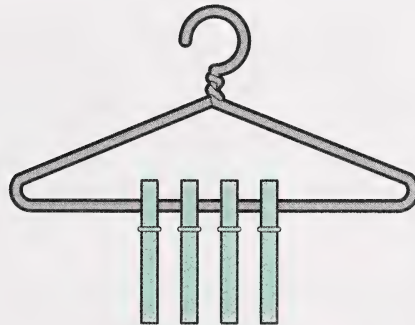




**Step 4:** Draw a number card from the pile, unclip that number of clothespins from the first hanger, and clip them to the second hanger.



**Step 5:** Ask the student to count how many clothespins are left on the first hanger.

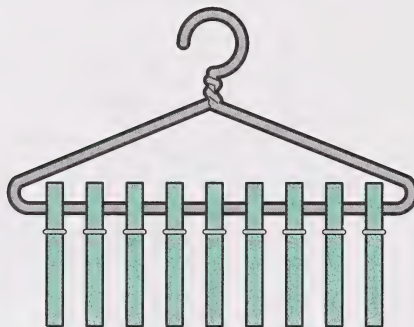


**Step 6:** At the top of a blank sheet of paper, print the title **What's My Subtraction Sentence?** Tell your student to print a subtraction number sentence to show the **take-away** action on the hanger, for example,  $9 - 5 = 4$ .

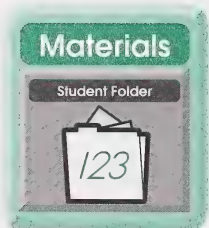
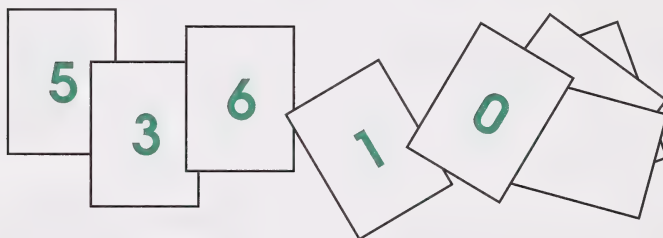
**What's My Subtraction Sentence?**

$9 - 5 = 4$

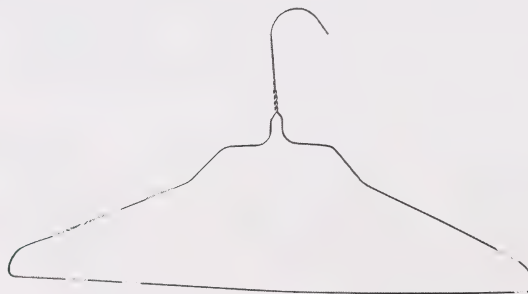
**Step 7:** Return the clothespins so there are again nine on the first hanger.



**Step 8:** Have your student repeat the process to record one subtraction number sentence with each number card.



**Step 9:** Label the back of the page with the student's first and last names and the abbreviated form of the module and day numbers, M5D1. Place this page in the Student Folder.





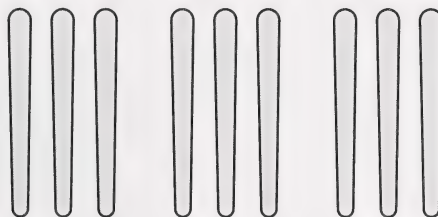
## Enrichment (optional)

Enrichment activities are always optional. If you think at this point that the student needs extra help or a challenge, you could postpone the final assignments until after one or more of these activities.

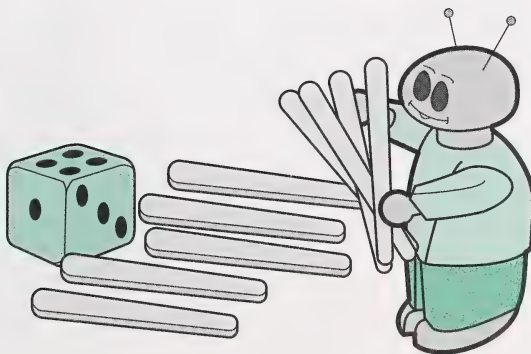
**Note:** Use of optional activities may require you to pace the student's progress in the rest of the module to accommodate special needs. For example, you could delay the final assignments until the student is ready for them. In that case, review the day's work before your student does the assignments.

### 1. Roll Down

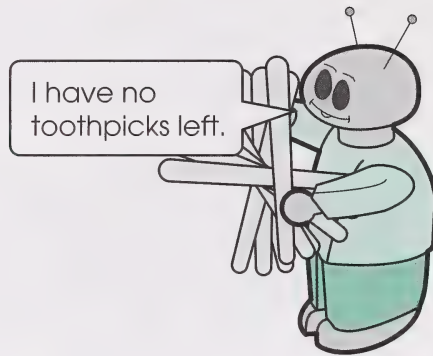
**Step 1:** Give the student and yourself each a set of nine small counters, such as toothpicks.



**Step 2:** Take turns rolling a die to see how many items to remove from your sets. Roll again if you turn up a number that is higher than your remaining number of items.

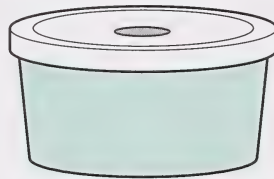


**Step 3:** Continue until one player has no items left.

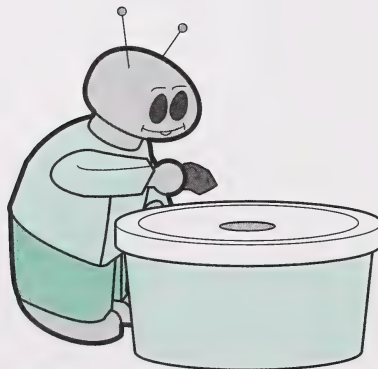


### 2. Shake Down

**Step 1:** Cut a small hole, about the size of a penny, in the lid of the plastic container.

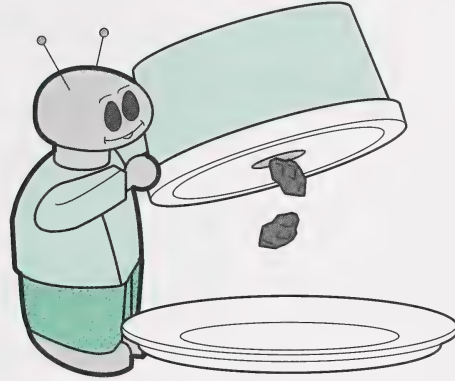


**Step 2:** Have the student count out nine raisins, candies, or pieces of cereal, and put them in the container. Replace the lid.

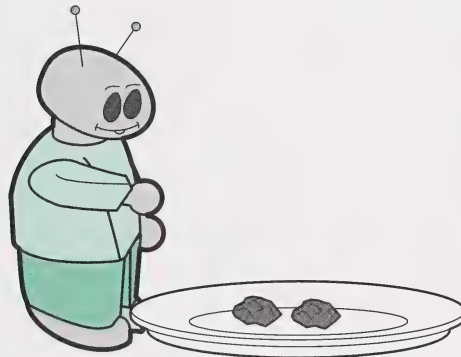




**Step 3:** Instruct your student to tip the container over just long enough to let a few food items fall on a plate.



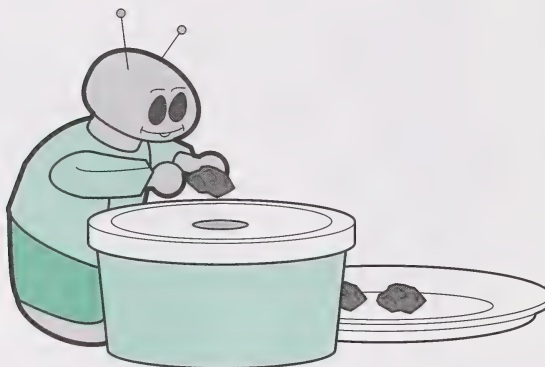
**Step 4:** Ask your student to count the items on the plate.



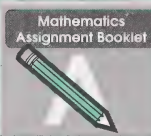
**Step 5:** Have the student record a subtraction sentence based on how many food items fell out of the container. For example, if two items fell out, the subtraction sentence would be  $9 - 2 = 7$ .

If your student needs extra help, open the container to count the remaining items.

**Step 6:** Have the student refill the container and repeat the process as long as interest is maintained. Then allow the student to eat the nine food items.

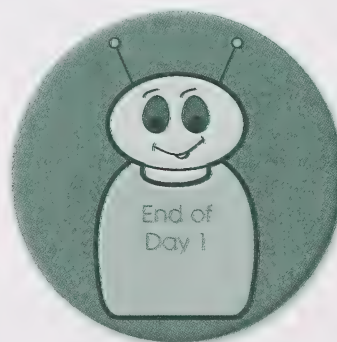


## Materials



Turn to Mathematics Assignment Booklet 5A, and follow the directions to do Day 1: Assignment 2.

Next, follow the directions to do Day 1: Assignment 3.





# Day 2



## Calendar Time

**Time recommended: 10 minutes**

If your student is not registered in the accompanying Thematic Program, refer to the Calendar Package for further information.

## Focus for Today

**Time recommended: 45 minutes**

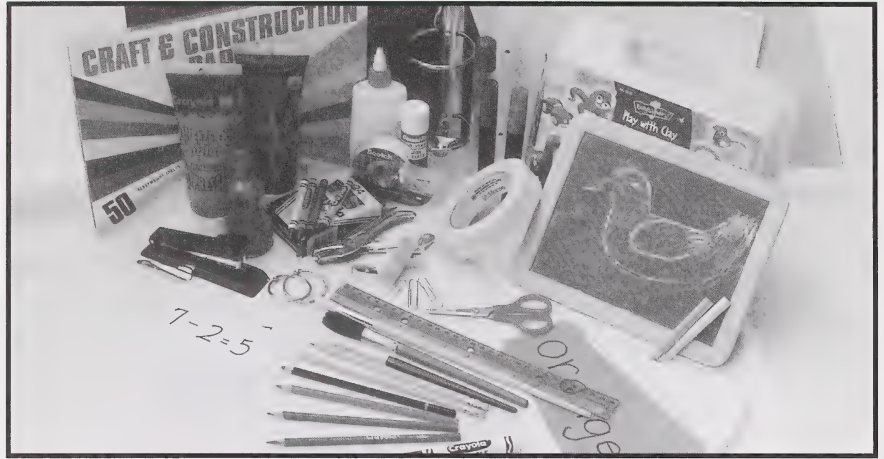
- sums to ten



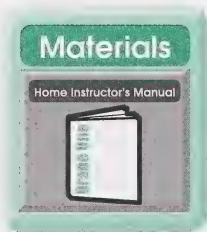
## Vocabulary (spoken only)

lower  
bottom  
upper  
top

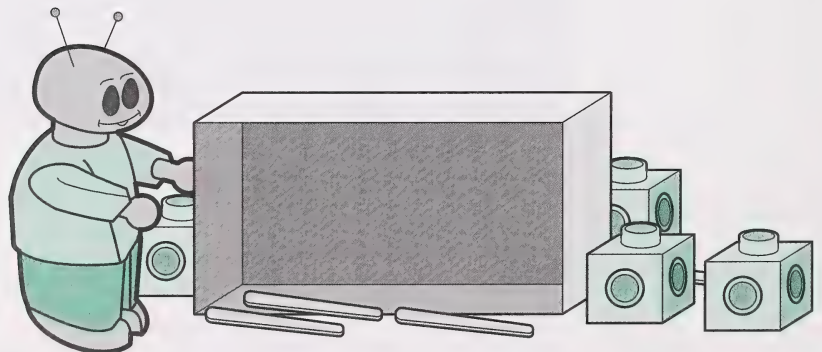
total  
actual  
vertical form  
beneath



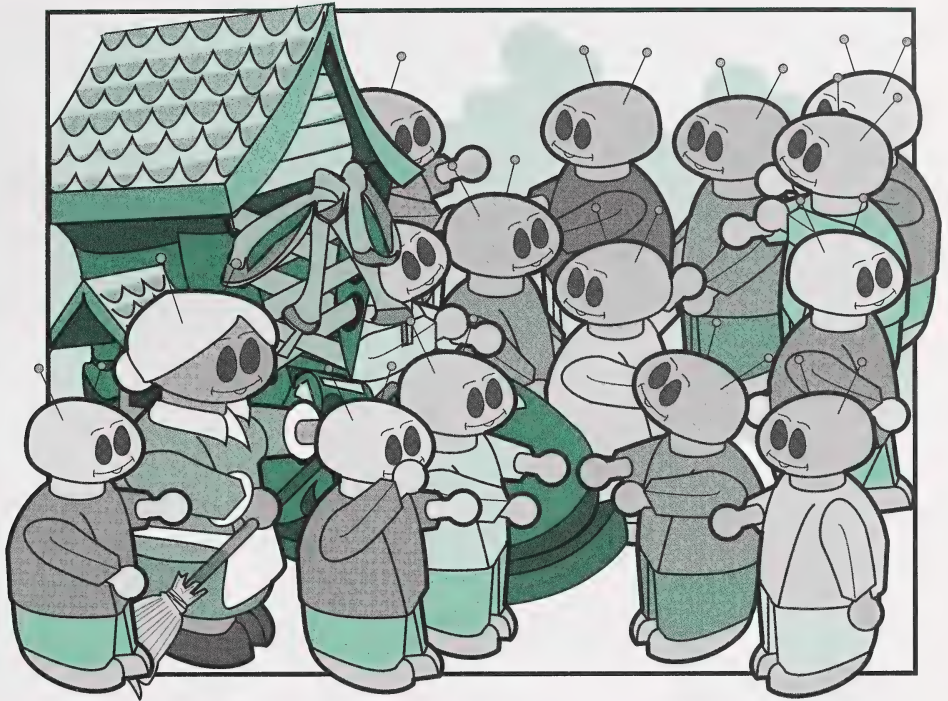
## Materials Required



- box containing required materials from the master list (See the Home Instructor's Manual.)
- empty shoebox
- toothpicks or suitable substitutes
- zero to five number cards (optional)
- interlocking cubes or suitable substitute (optional)
- ten pennies (optional)
- plastic container with a lid (optional)







## Developing the Concept

Read the following two lines of rhyme aloud.

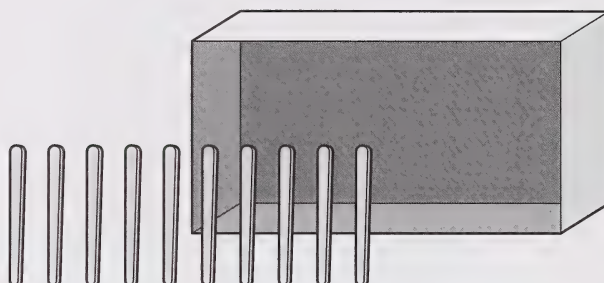
### == The Old Woman Who Lived in a Shoe ==

There was an old woman who lived in a shoe.

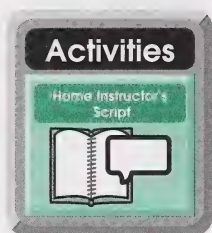
She had so many children, she didn't know  
what to do.



Set out a shoebox and ten toothpicks or suitable substitutes. Turn the shoebox on its side, with the open part facing the child.



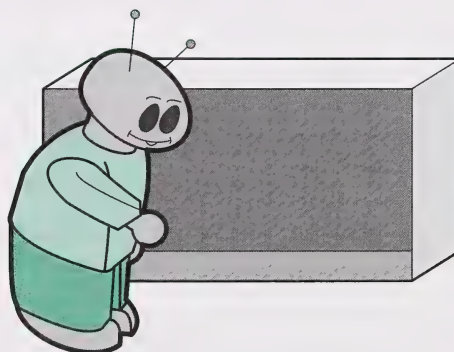
Use the following script.



Did the old woman who lived in a shoe have a lot of children? (yes)

The shoe was not very big, so she bought bunk beds so more children could sleep in the small space.

Imagine that this shoebox is a bunk bed.



Point to the side of the box that is touching the table, and ask the student to imagine that this part of the box is the **lower**, or **bottom**, bunk.



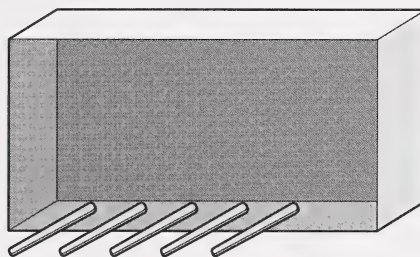
## Activities

Teaching Tip



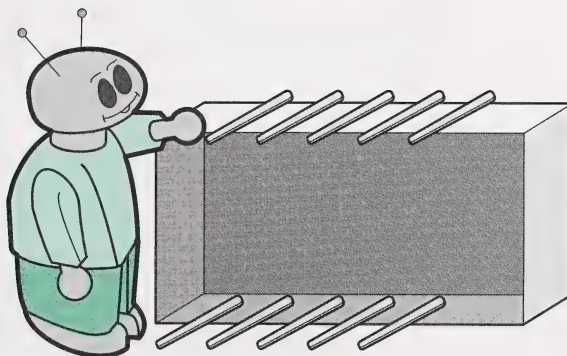
Note that throughout today's lesson, the words **lower** and **bottom** are used interchangeably. So are the words **upper** and **top**.

Have the student place five toothpicks on the lower bunk.

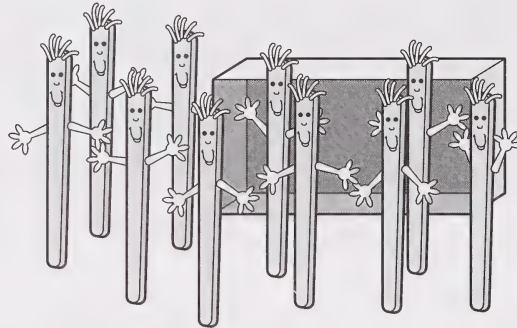


How many children are sleeping on the **lower**, or **bottom**, bunk? (5)

Point to the top side of the box. Tell the child to imagine that this is the **upper**, or **top**, bunk.



Have the student place five toothpicks on the upper bunk and then imagine that the toothpicks are the children of the old woman who lived in a shoe.



Continue with the following questions and requests.

How many children are sleeping on the **upper**, or **top**, bunk? (5)

Estimate how many children there are in **total**.

Now count all of the children.

How close was your estimate to the **actual** count?

If the student does not understand that there are ten children in total, guide in counting the imaginary toothpick children.

Print a number sentence that shows the **total** number of children on the **top** and **bottom** bunks. ( $5+5=10$ )

Bunk beds have a **top** and a **bottom**.

You can print your number sentence with a top and a bottom.

This is called the **vertical form**.



First, print the number of children on the **top** bunk.

$$5$$

**Under** this number and over to the **left** a little, make an addition sign.

$$\begin{array}{r} 5 \\ + \end{array}$$

Right under the **first** number, print the number of children on the **bottom** bunk.

$$\begin{array}{r} 5 \\ + 5 \\ \hline \end{array}$$

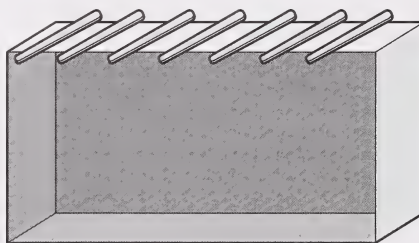
Make a horizontal line **under** the **second** number.

**Beneath** the line, print the total number of children on the **top** and **bottom** bunks.

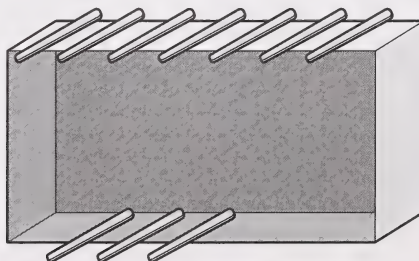
$$\begin{array}{r} 5 \\ + 5 \\ \hline 10 \end{array}$$

Next, ask your student to pretend that it is time for the toothpick children to wake up and go outside to play. Have the child remove the ten toothpicks from the bunk beds.

Engage the student's imagination again by placing seven toothpicks on the top bunk. Pretend that these children were tired after playing all morning, so they decided to have an afternoon nap.



Next, place three toothpicks on the lower bunk, and tell your student that these children decided to nap as well.

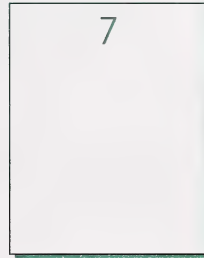




Continue with the script.

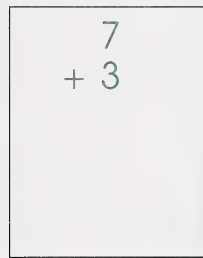
How many children are napping on the **upper** bunk? (7)

Print the number 7 on a piece of paper.



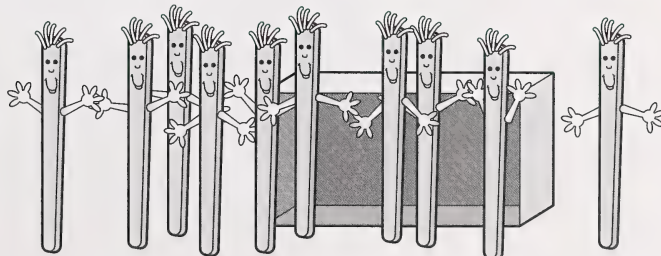
How many children are napping on the **lower** bunk? (3)

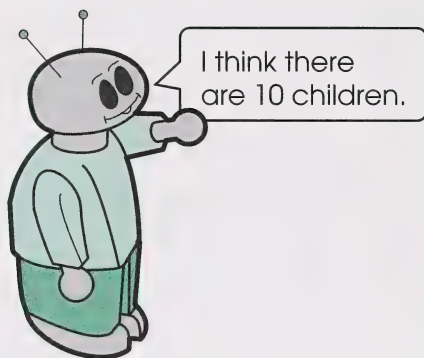
Print the number 3 directly **under** the number 7.



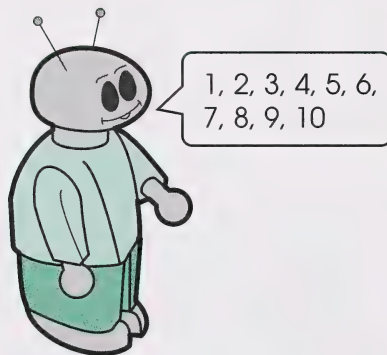
Place an addition sign to the **left** of the number 3.

Estimate how many children there are in **total**.





Count the number of napping children that there are in **total**.



How does your estimate compare to the **actual** count?

Draw a line under the number 3.  
Then print the answer.

$$\begin{array}{r} 7 \\ + 3 \\ \hline 10 \end{array}$$

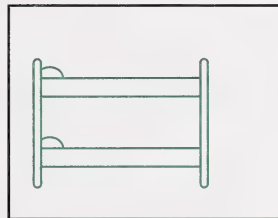




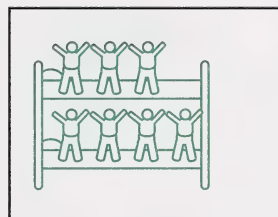
## Applying the Concept

### How Many Children?

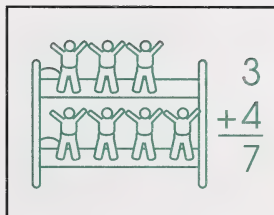
**Step 1:** Have the student draw a bunk-bed shape on blank paper.



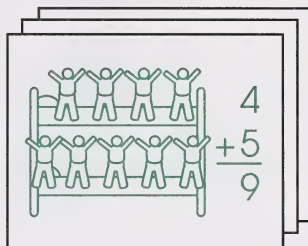
**Step 2:** Ask the student to draw children on the top and bottom bunks. The total number should not exceed a sum of ten.



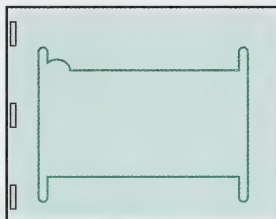
**Step 3:** Print a matching number sentence in the vertical form.



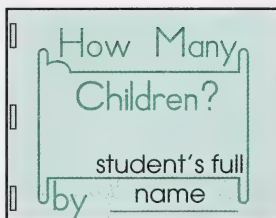
**Step 4:** Follow the first three steps for two more illustration pages with matching number sentences.



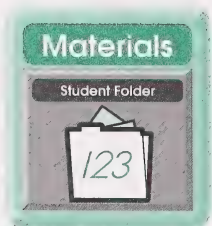
**Step 5:** Place the three pages between two sheets of construction paper as the front and back covers. Staple together on the left side to make a booklet.



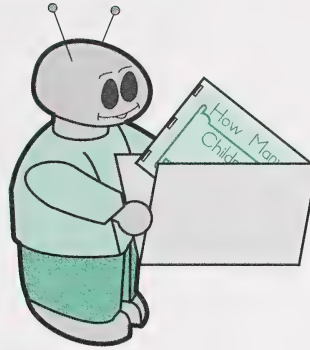
**Step 6:** Help the student print the title of the booklet, **How Many Children?** Next, have the child print the word **by** and then first and last names.



**Step 7:** Label the back of the booklet with the module and day numbers, M5D2.



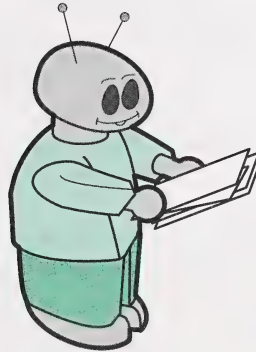
Encourage your student to talk about the booklet with family and friends. Then place the booklet in the Student Folder.



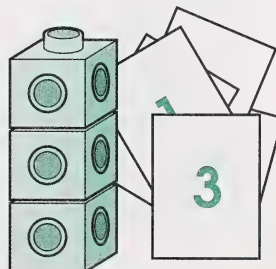
## Enrichment (optional)

### 1. Ten Floors Up

**Step 1:** Shuffle the zero to five number cards, and place them face down on the table.

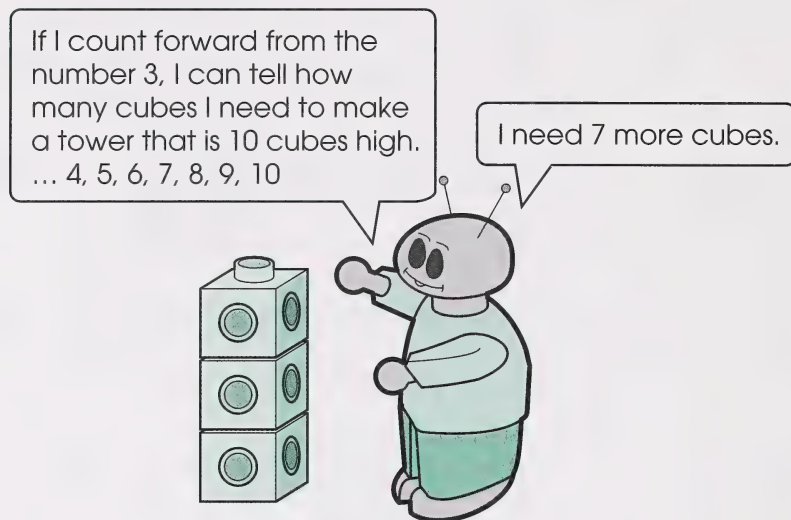


**Step 2:** Have the student pick the top card from the pile and make a tower with a matching number of interlocking cubes in one colour.





**Step 3:** Ask the child how many of another colour of cubes would be needed to make the tower ten cubes tall.



**Step 4:** Help the student finish the tower by adding the correct number of cubes in the second colour.

**Step 5:** Have your student record, in vertical form, a number sentence that represents the tower.

Make sure that the top and bottom numbers in the number sentence refer to the appropriate numbers of cubes on the tower. Put the first number of cubes at the top of the number sentence.

$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$

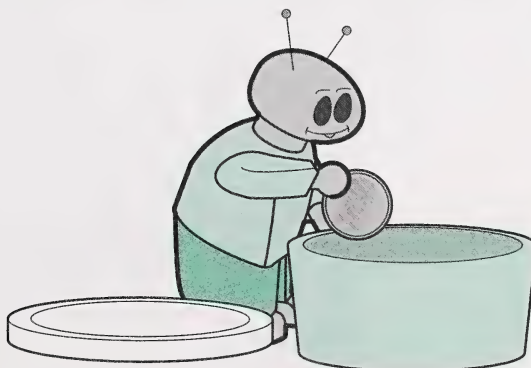
**Step 6:** Continue until the student has practised a variety of vertical number sentences or until the child shows signs of fatigue.

## 2. Shake 'Em Up

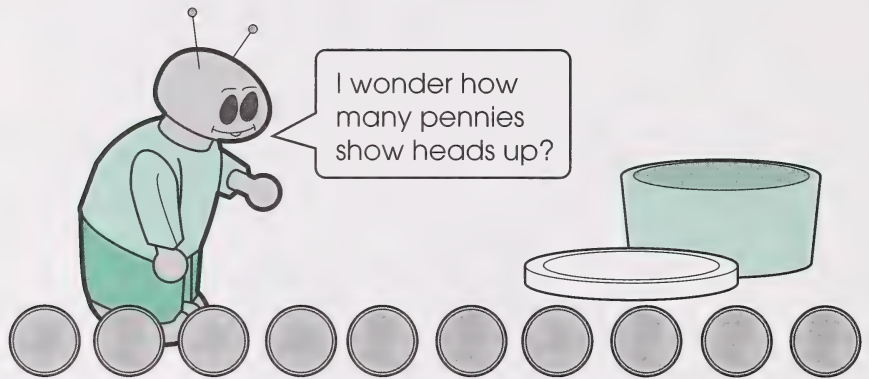
**Step 1:** Help your student make a chart similar to the one shown below. Make the number-sentence column high enough to fit a vertical number sentence.

Heads	Tails	Number Sentence



**Step 2:** Instruct the student to place ten pennies in a plastic container, seal the lid, and shake the container.



**Step 3:** Have the child open the container and spill the pennies on the table.

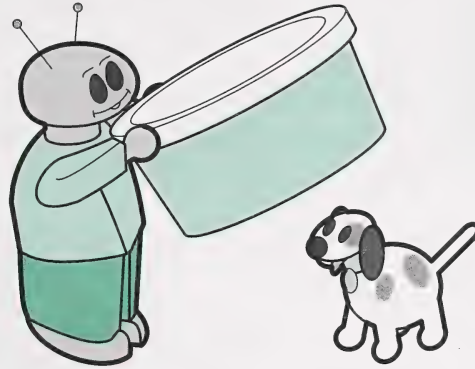


**Step 4:** Direct the student to fill in the blanks on the chart, using the numbers of heads and tails that landed face up.

Heads	Tails	Number Sentence
		$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$



**Step 5:** Repeat the process until the chart is completed.



## Day 2 • Mathematics

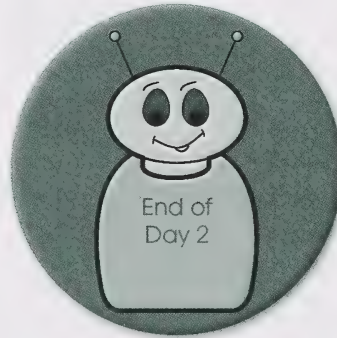
### Materials

Mathematics  
Assignment Booklet



Turn to Mathematics Assignment Booklet 5A, and follow the directions to do Day 2: Assignment 1.

Next, follow the directions to do Day 2: Assignment 2.



# Day 3



## Calendar Time

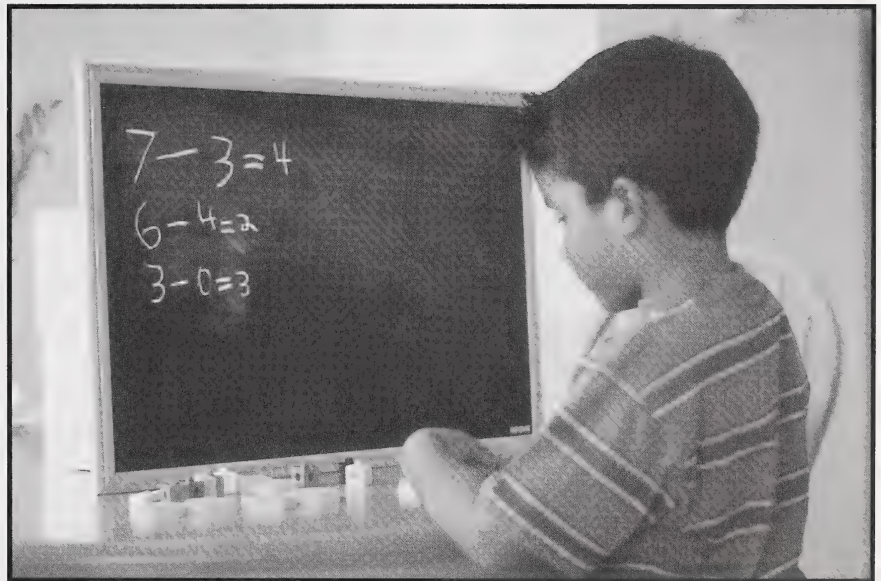
**Time recommended: 10 minutes**

Begin with the usual Calendar Time activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- differences to ten



## Vocabulary (spoken only)

enough  
large  
countdown



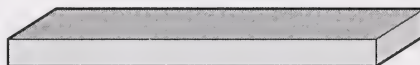
### Materials Required

- box containing required materials from the master list
- toothpicks or suitable substitute
- shoe-box lid
- ten different household objects (optional)

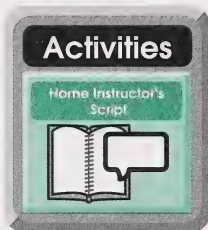
### Developing the Concept

To this point in the program, your student's learning about subtraction has extended only to differences up to nine. Today, the student will expand understanding by using manipulatives to examine and represent differences to ten.

Set out ten toothpicks and a shoe-box lid. Place the lid with the open side down.



Introduce the activity with the following script.

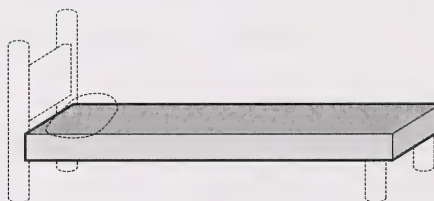


The old woman who lived in a shoe had so many children, she didn't know what to do.

Last day, you heard that the old woman bought some bunk beds to find enough room for the children to sleep.

There were still not **enough** beds for all the children, so some had to share one **large** bed.

Imagine that this shoe-box lid is a large bed.



Place ten toothpicks on the lid, and ask the student to continue imagining that each toothpick is one of the old woman's children.



How many children are sleeping on the bed?  
(10)

This bed is so crowded. Sometimes, one of the children says, "Roll over, roll over, so I can have more room."

Read the following rhyme aloud, removing three toothpicks from the bed at the appropriate place in the rhyme.

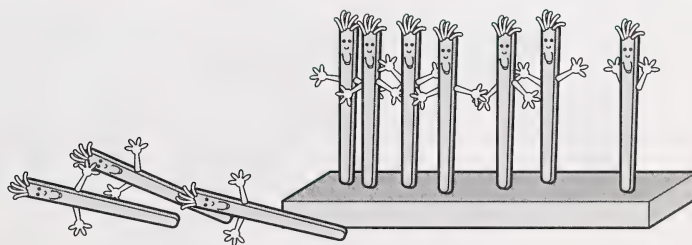
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---

**There were 10 on the bed,  
and the little ones said,  
"Roll over! Roll over!"**

**So they all rolled over, and 3 fell off.**

**There were 7 children left on the bed,  
and the little ones said,  
"Thank you! Thank you!"**



Ask your student to print a number sentence that shows what happened on the crowded bed. ( $10 - 3 = 7$ )

Have the child replace the three toothpicks so that there are ten again on the imaginary bed.

Repeat the rhyme, but this time remove five toothpicks at the appropriate place.

---

---

**There were 10 on the bed,  
and the little ones said,  
“Roll over! Roll over!”**

**So they all rolled over, and 5 fell off.**

---

---

Ask the student to estimate how many children are left on the bed and then do the actual count. Next, say the final verse.

---

---

**There were 5 left on the bed,  
and the little ones said,  
“Thank you! Thank you!”**

---

---

Have your student print a matching number sentence. ( $10 - 5 = 5$ )

Continue to have different numbers of children roll off the bed until your student has subtracted all the numbers to ten.





## Applying the Concept

### Materials

Mathematics  
Assignment Booklet

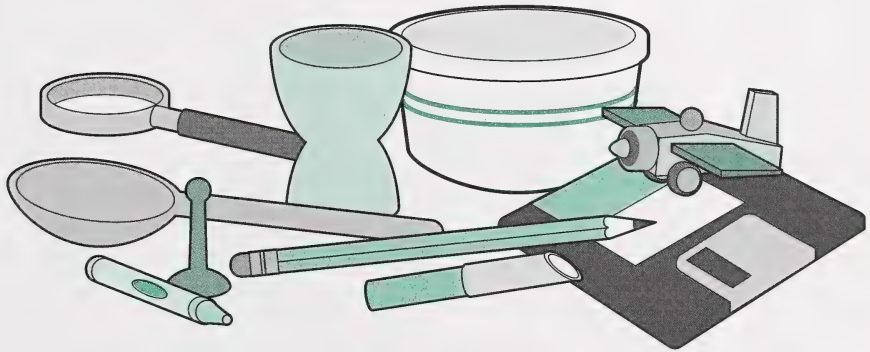


Turn to Mathematics Assignment Booklet 5A, and follow the directions to do the assignment for Day 3.

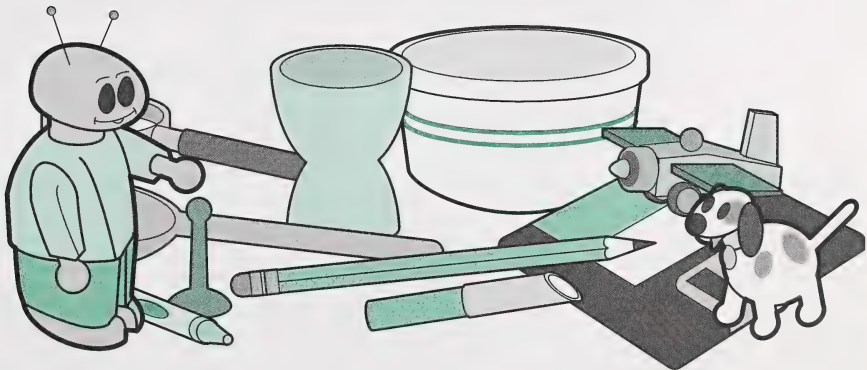
## Enrichment (optional)

### 1. Test Your Subtraction and Memory Skills

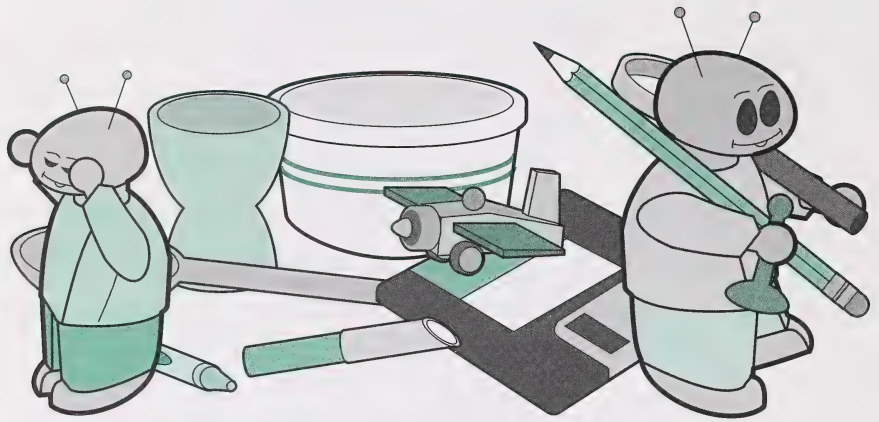
**Step 1:** Place ten different household items on a table.



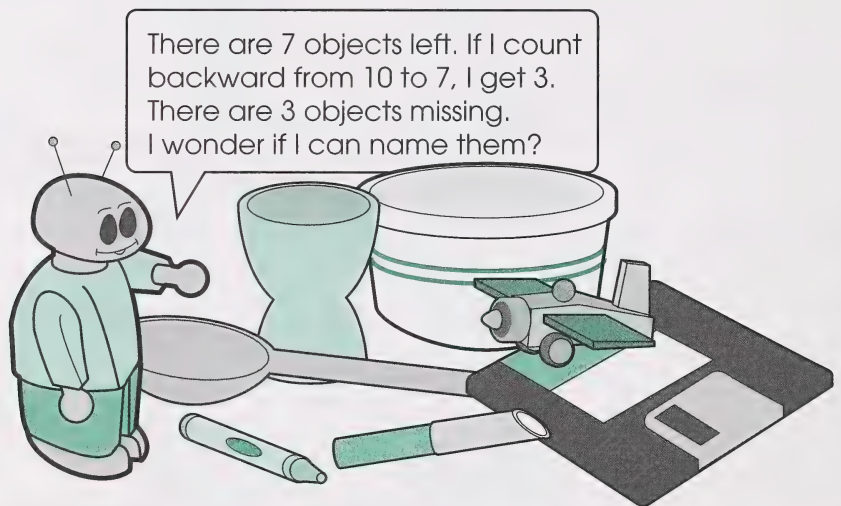
**Step 2:** Have your student look at them for one minute.



**Step 3:** While the student's back is turned, you remove or hide some of the objects.



When your student turns, ask how many objects are missing and if the child can name them.



### Activities

#### Teaching Tip

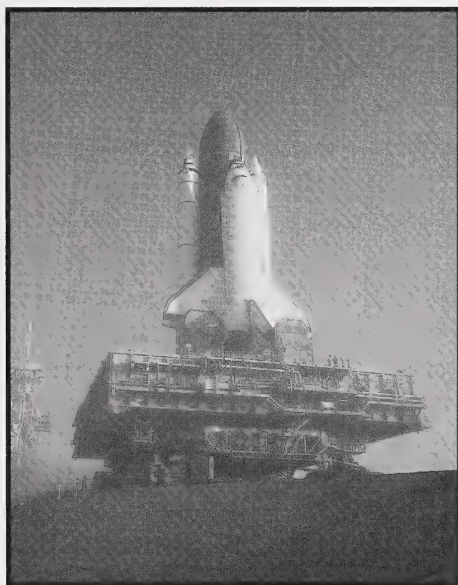


The strategy of counting forward or backward is most effective when the number to be added or subtracted is 1, 2, or 3.

**Step 4:** Ask your student to print a matching number sentence.

$$\begin{array}{r} 10 \\ - 7 \\ \hline 3 \end{array}$$

**Step 5:** Take turns removing some items. Have the other person identify how many are missing, name them, and print a matching number sentence.

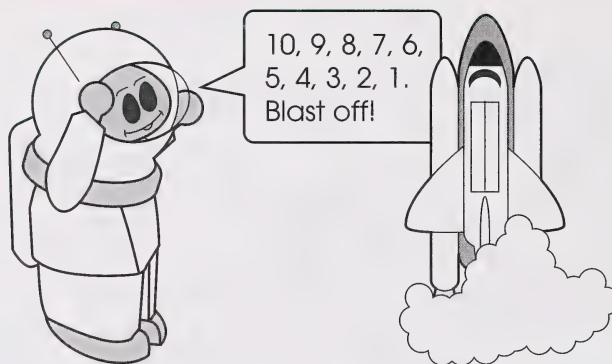


## 2. Backward Countdown

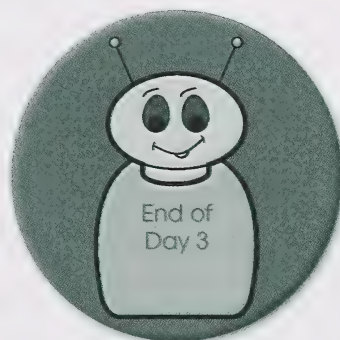
A backward **countdown** is a great way to help your student develop counting and subtracting skills.

For example, the student could pretend to be at Cape Canaveral for a shuttle launch. Start with a chosen number, and challenge the student to count down to zero, or liftoff.





Your student might also use the strategy of counting down by ones to help get dressed, brush teeth, get ready for a special event, or any other suitable activity.



# Day 4



## Calendar Time

**Time recommended: 10 minutes**

Begin with the usual Calendar Time activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- sums to ten
- differences to ten



## Vocabulary (spoken only)

commutative property  
addends  
double facts

no more  
problems/problem

## Materials Required

- box containing required materials from the master list
- interlocking cubes or other types of counters
- addition and subtraction number-sentences cards to ten (optional)
- pennies (optional)

## Developing the Concept

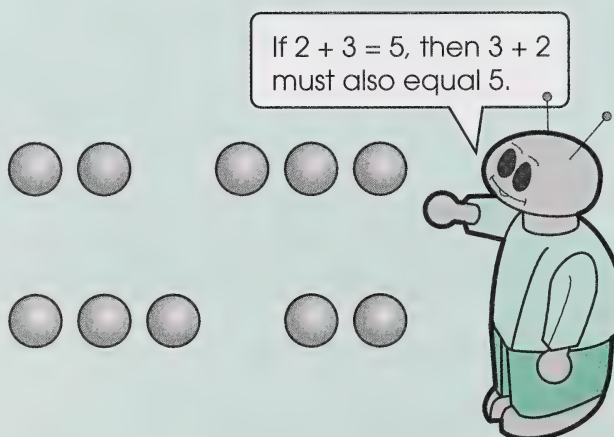
Today, your student will continue to find sums and differences to ten using manipulatives and strategies.



### Addition Strategies

#### Commutative Property

The challenge of learning the basic addition facts is made easier because of the **commutative property**. This property states that changing the order of the **addends** does not affect the sum. Guide and encourage observations such as the following.




Continued ...



## Counting Forward

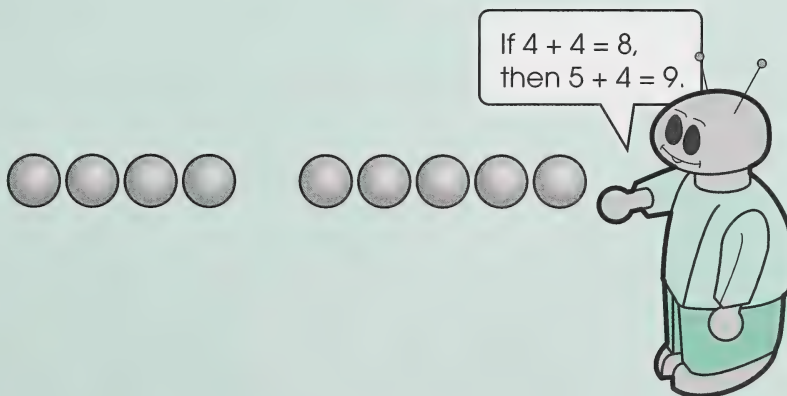
This addition strategy involves starting with the larger addend, counting forward with the number of the second addend, and stating the total amount. While counting forward could be described as a “natural” strategy for children, they need guidance in starting with the larger addend. Many children have a tendency to start with the smaller number and count forward with the larger number. For example, with the problem  $5 + 3$ , the student would start with 3 and count forward 5, instead of doing the reverse. An understanding of the commutative property can help with this process.

$$5 + 3 = \underline{\quad}$$


This strategy is most effective when the number to be added is small.

## Doubles, One More, or One Less

Observing that an unknown fact is one more or one less than a known fact is helpful. Learning the **double facts**, for example,  $4 + 4 = 8$ , is easy for most children. This knowledge can then be used to calculate basic facts such as  $5 + 4 = 9$ , because that sum is one more than  $4 + 4 = 8$ .



Continued ...



## Subtraction Strategies

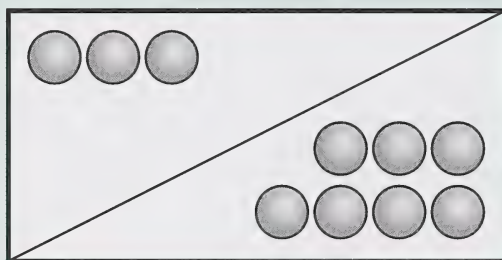
### Making a Connection Between Addition and Subtraction

For each addition fact, there is a related subtraction fact. Help your student recognize, think about, and use the relationship between addition and subtraction facts.

For example, if the problem is  $10 - 7$ , think as follows.

$$10 - 7 = \underline{\hspace{2cm}} \quad \text{Think, } 7 + 3 = 10 \quad \text{So, } 10 - 7 = 3$$

The relationship between addition and subtraction allows the basic facts to be grouped into “families.” Except for the doubles, each family consists of four related facts, as shown in the example below.



$$3 + 7 = 10 \quad 10 - 3 = 7$$

$$7 + 3 = 10 \quad 10 - 7 = 3$$

Doubles families consist of two related facts. For example,  $4 + 4 = 8$     $8 - 4 = 4$

### Counting Backward

Counting backward involves counting from the total amount to the number being subtracted. This strategy is not as easy for most children as counting forward. To help the student use this strategy, give lots of opportunities to count backward and to write the numbers in order from a specific starting point, for example, 10, 9, 8 .... Using manipulatives can also help the student count backward. This strategy is most effective when the number to be subtracted is 1, 2, or 3.

$$6 - 2 = \underline{\hspace{2cm}}$$



$$6, \underline{5}, \underline{4}$$

Continued ...

### Counting Forward

To use this strategy for subtracting, the student can begin counting from the number that is being subtracted and go forward to the total amount, noting the number that is added through counting. For example, if the problem is  $8 - 6$ , think as follows.

$$8 - 6 = \underline{2} \quad \text{Think, 6, 7, 8} \quad \text{So, } 8 - 6 = 2$$

This strategy is best used in situations where the difference is small.

### Working with Zero

Zero added to or subtracted from any other number does not change that number. Children usually understand this after many experiences with real objects in which they see that any time they add or subtract **no more**, they have the same amount.



$1 + 0 = \boxed{1}$

$0 + 1 = \boxed{1}$

$1 - 0 = \boxed{1}$



$2 + 0 = \boxed{2}$

$0 + 2 = \boxed{2}$

$2 - 0 = \boxed{2}$



$3 + 0 = \boxed{3}$

$0 + 3 = \boxed{3}$

$3 - 0 = \boxed{3}$



$4 + 0 = \boxed{4}$

$0 + 4 = \boxed{4}$

$4 - 0 = \boxed{4}$

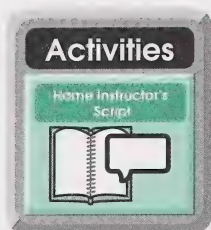


### Addition and Subtraction Trains

Set out a collection of two colours of interlocking cubes. Create a two-coloured train with ten cubes.



Focus your student's attention on the train with the following questions.



How many \_\_\_\_\_ colour \_\_\_\_\_ cubes are in the train?

How many \_\_\_\_\_ colour \_\_\_\_\_ cubes are in the train?

How many cubes are in the train in total? (10)

On a blank index card, have the child record an addition number sentence that shows the two colours of cubes that make up the train.

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = 10$$

Take one set of coloured cubes away from the train.

How many cubes long was the train? (10)

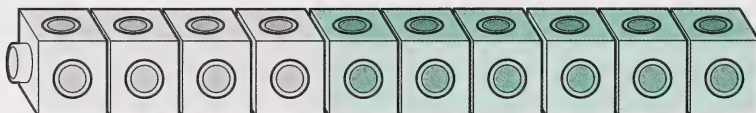
How many cubes did I take away?

How many cubes are left?

Have the child record the subtraction number sentence on the other side of the addition sentence card.

$$10 - \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

Repeat the same addition, subtraction, and recording process for five more two-coloured trains of ten.



$$\underline{\quad} + \underline{\quad} = 10$$

$$10 - \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} + \underline{\quad} = 10$$

$$10 - \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} + \underline{\quad} = 10$$

$$10 - \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} + \underline{\quad} = 10$$

$$10 - \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} + \underline{\quad} = 10$$

$$10 - \underline{\quad} = \underline{\quad}$$

## Applying the Concept

### Stories for Ten

**Step 1:** Help the student think of an addition story for ten and write it on a piece of loose-leaf paper.

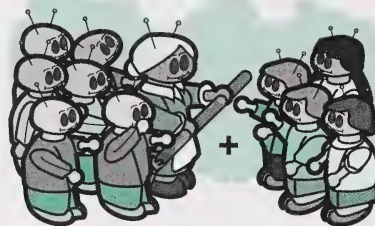
The old woman in the shoe  
had 6 little boys.  
The old woman in the shoe  
had 4 little girls.  
The old woman in the shoe  
had 10 children in total.

**Step 2:** Have your student create an illustration to match the story.

The old woman in the shoe  
had 6 little boys.

The old woman in the shoe  
had 4 little girls.

The old woman in the shoe  
had 10 children in total.



Remind the student to include the appropriate operation sign between the two sets in the illustration.

**Step 3:** Help the student think of a subtraction story for ten and write it on a piece of loose-leaf paper.

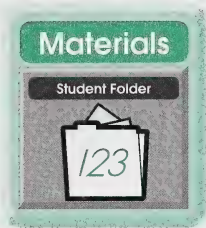
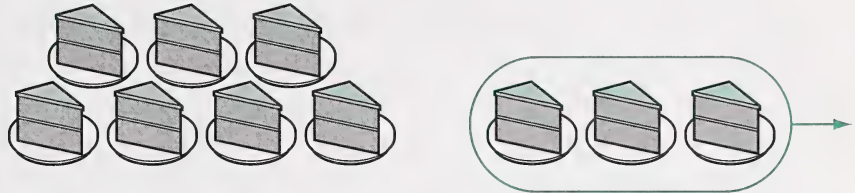
The old woman in the shoe  
had 10 pieces of cake.

3 children had one piece  
each.

There were 7 pieces of cake  
left.



**Step 4:** Instruct your student to create an illustration to match the story, circle the number of items that are being taken away, and attach an arrow to the circle.



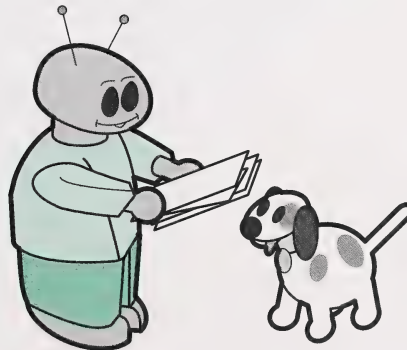
**Step 5:** Have the student staple the addition and subtraction stories together and print first and last names and the abbreviated form of the module and day numbers, M5D4, on the back. Place the pages in the Student Folder.



## Enrichment (optional)

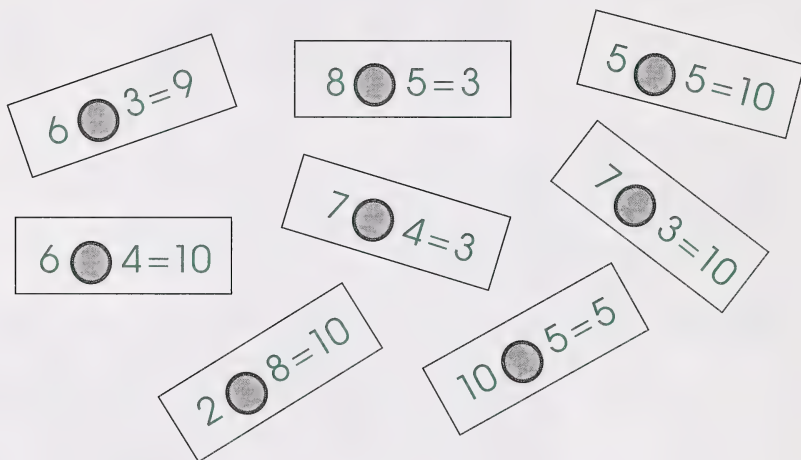
### Addition and Subtraction Game

**Step 1:** Shuffle the addition and subtraction number-sentence cards to ten.



**Step 2:** Arrange the cards on the table while the student's back is turned. Have close to the same number of addition and subtraction number-sentence cards face up.

Place a penny over each operation sign.



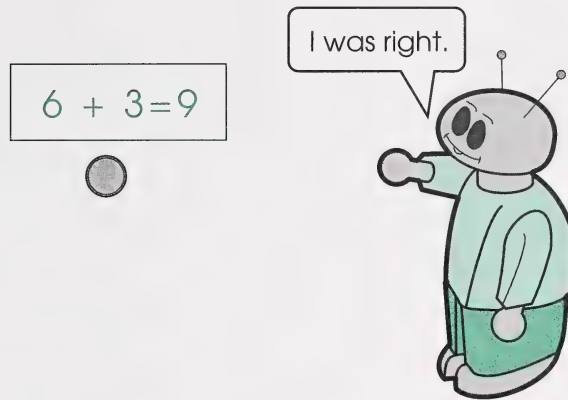
**Step 3:** Have the student face the cards again, predict if each operation is addition or subtraction, and give a reason.

$$6 \ominus 3 = 9$$

I think it is addition, because the answer is bigger than both numbers.



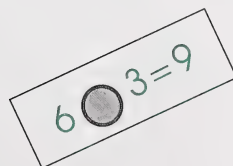
**Step 4:** After each prediction, have the child lift the penny to check for correctness.



**Step 5:** If the student predicts correctly, consider having the child keep the penny to count.

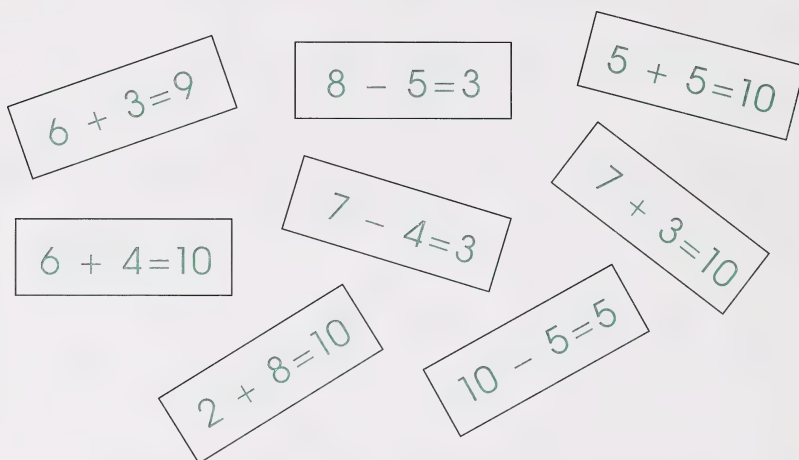


If the student predicts incorrectly, replace the penny and give the child another try at this number sentence later.

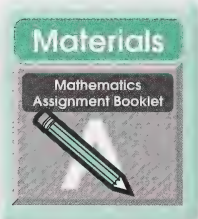




**Step 6:** Continue until all the correct operations have been determined and there are no pennies left on the cards.



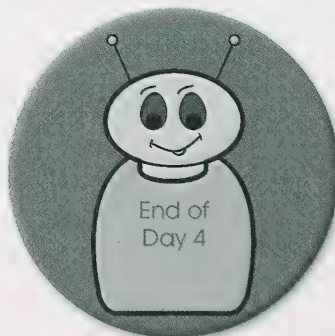
You could play this game again later for extra practise or fun.



Turn to Mathematics Assignment Booklet 5A, and follow the directions to do Day 4: Assignment 1.

Next, follow the directions to do Day 4: Assignment 2.

Then complete Day 4: Learning Log. Under Student's Thoughts, help your student finish the sentence starters.



# Day 5



## Calendar Time

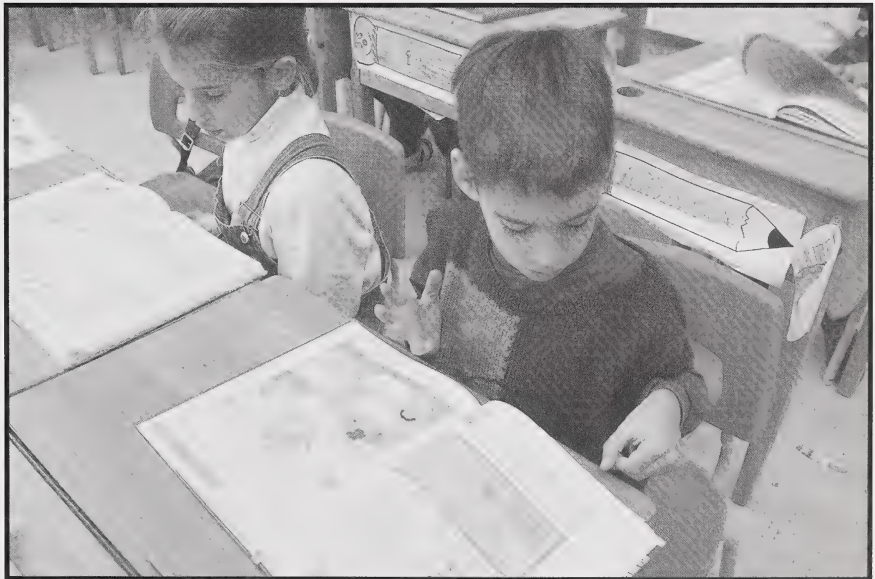
**Time recommended: 10 minutes**

Begin with the usual Calendar Time activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- sums to ten
- differences to ten

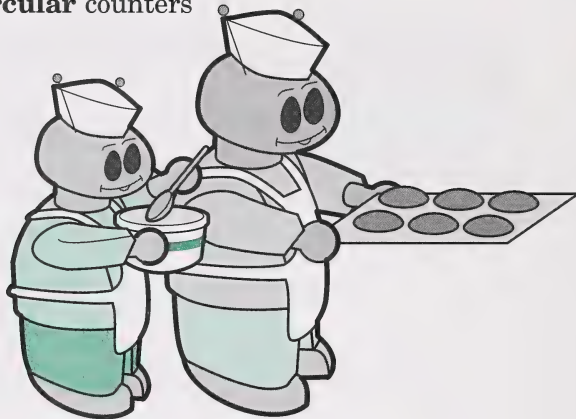


## Vocabulary (spoken only)

circular  
changing  
shape

### Materials Required

- box containing required materials from the master list
- cookies or other **circular** counters



### Developing the Concept

Read the following verse aloud twice.

===== **How Many Cookies Are  
in the Cookie Jar?** =====

**I put 4 cookies in the cookie jar.  
My friend put 3 cookies in the cookie jar.  
How many cookies are in the cookie jar?**





This verse is adapted from the traditional verse “Who Stole the Cookies from the Cookie Jar?”

Give the student cookies or circular counters to add how many cookies there are in total. Take turns **changing** the numbers added and providing answers until the student has practised sums to ten.

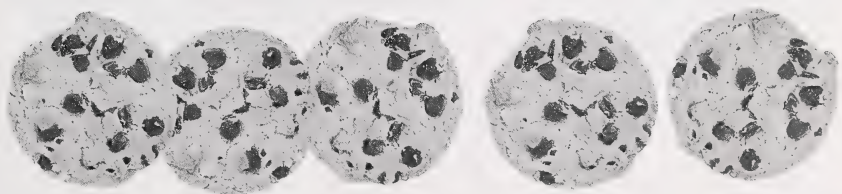
Now, read together another adaption of “Who Stole the Cookies from the Cookie Jar?”

### How Many Cookies Are Left in the Cookie Jar?

There were 10 cookies in the cookie jar.  
I took 5 cookies from the cookie jar.  
How many cookies are  
Left in the cookie jar?



Have the student continue to use cookies or circular counters to find out how many cookies are left. Take turns changing the numbers subtracted and providing answers until the student has practised differences to ten.

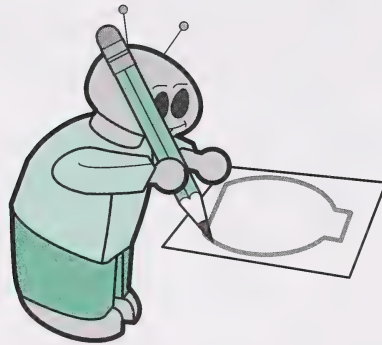


## Applying the Concept

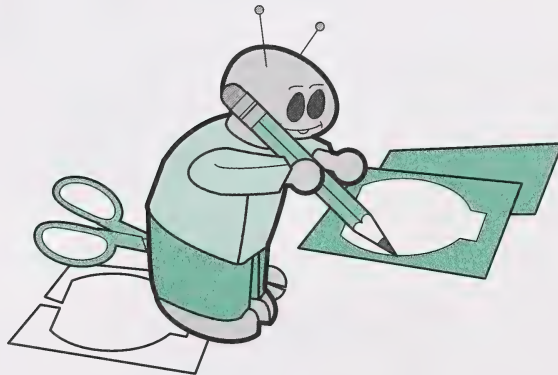
How Many Cookies Are in the Cookie Jar?

How Many Cookies Are Left in the Cookie Jar?

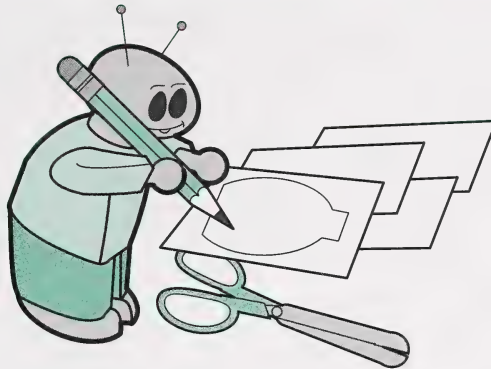
**Step 1:** Have the student draw a cookie-jar **shape** on light cardboard.



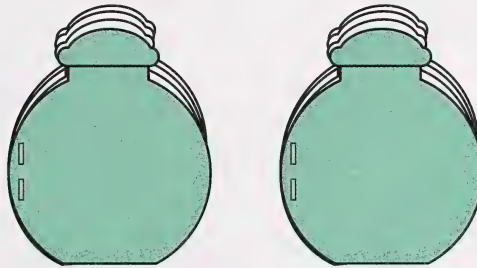
Cut out the shape, and let the student trace it to make front and back covers for two booklets.



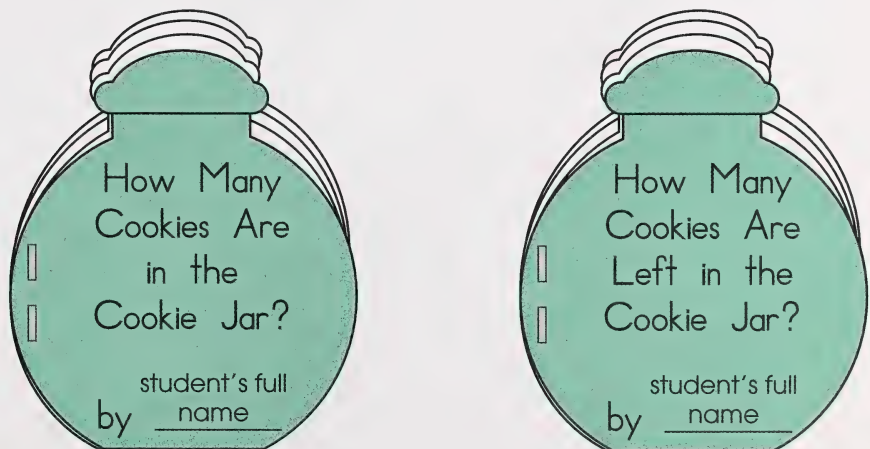
**Step 2:** Use the same tracer to make four inside pages on blank loose-leaf paper. Cut out all the cookie-jar shapes.



**Step 3:** For each booklet, place two inside pages between the front and back covers. Staple the pages together on the left side.



**Step 4:** Print titles on the front covers of the booklets, as shown following.



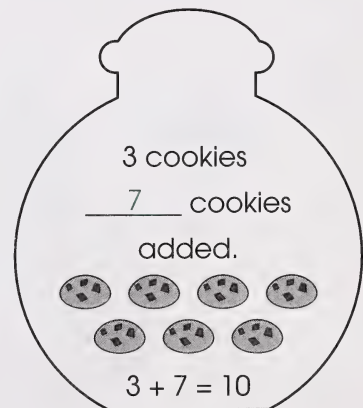
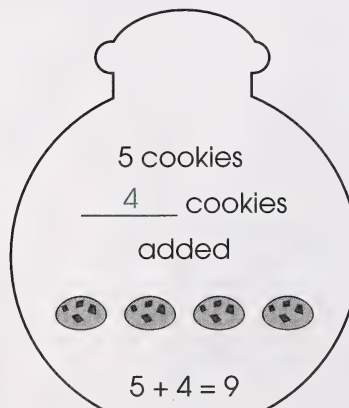


Have the student's full name printed on the front and the abbreviated form of the module and day numbers, M5D5, on the back of each booklet.

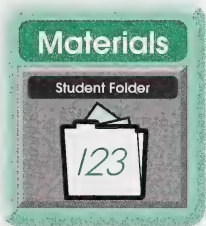
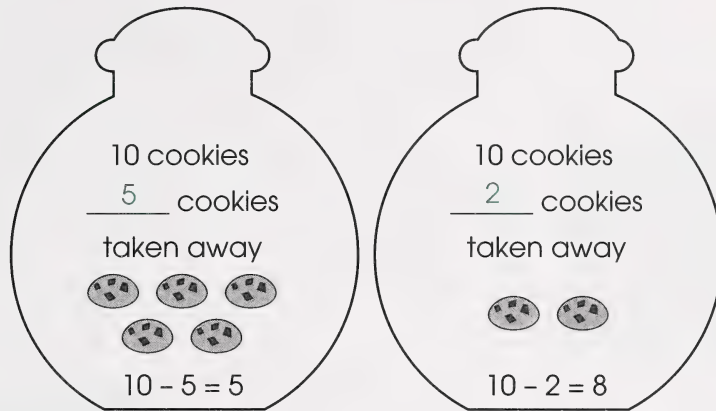
**Step 5:** Print a shortened version of the verse on the two inside pages of the booklet **How Many Cookies Are in the Cookie Jar?** Omit the number of cookies to be added to the jar, and have your student choose and print some numbers.



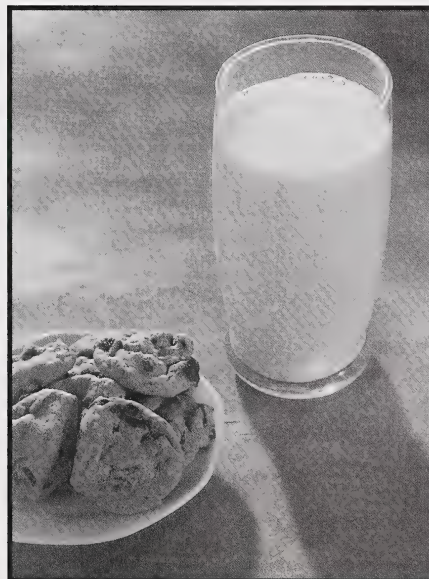
**Step 6:** Have the child illustrate the two verses and show a corresponding number sentence for each one.



**Step 7:** Repeat Steps 5 and 6 for the second booklet, but this time ask your student to subtract, rather than add.

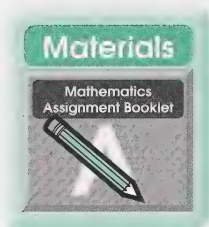


Place both booklets in the Student Folder.

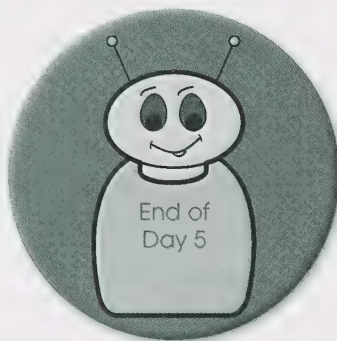


### Enrichment (optional)

There are no Enrichment activities today. If you think your student needs extra practice or a challenge, you could choose an activity from a previous day.



Turn to Mathematics Assignment Booklet 5A, and follow the directions to do the assignment for Day 5.





# Day 6



## Calendar Time

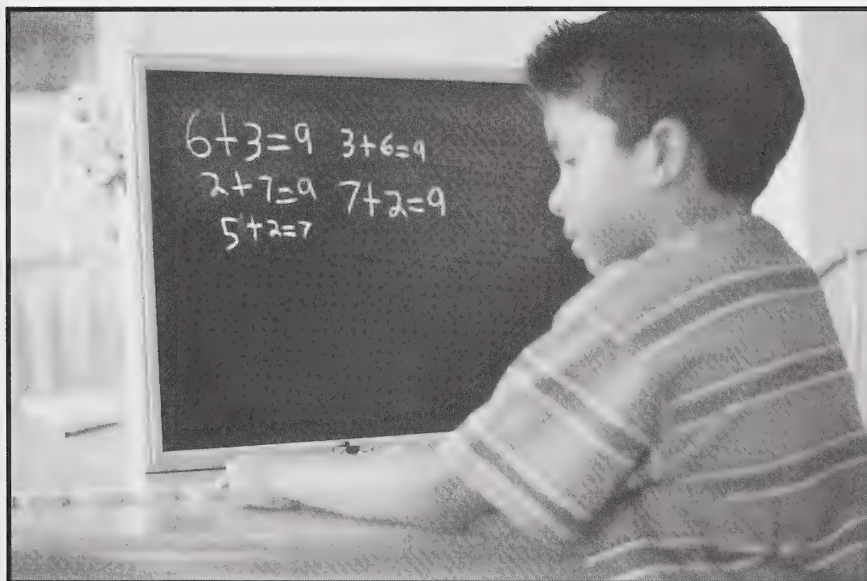
**Time recommended: 10 minutes**

Begin with the usual Calendar Time activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

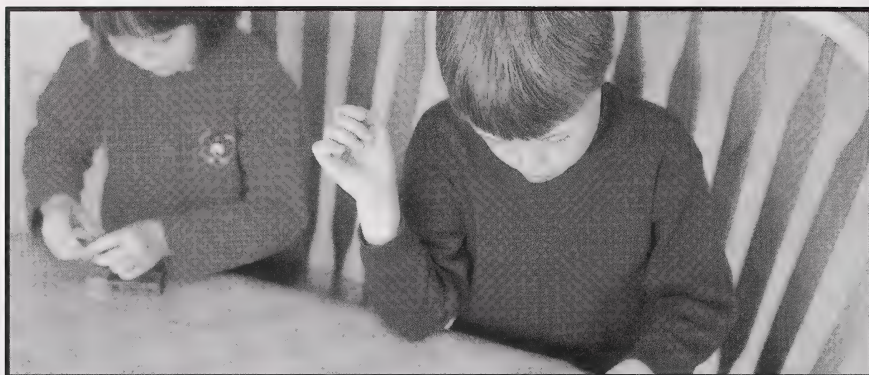
- related addition facts



## Vocabulary (spoken only)

facts  
figure out  
reversed

calculator  
flip side  
twenty (20)



### Materials Required

- box of required materials from the master list
- assorted counters, such as stuffed animals, bingo chips, and interlocking cubes
- calculator
- zero to ten number cards (optional)
- addition-sign and equals-sign cards (optional)



## Developing the Concept

Today, your student will focus on related addition facts.



Learning basic addition **facts** is simplified when the student realizes that any two numbers will have the same sum, no matter which one comes first.



$$2 + 3 = 5$$

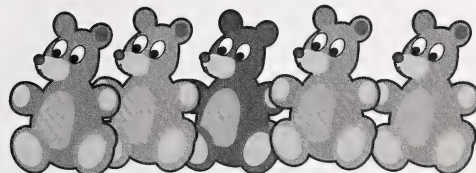
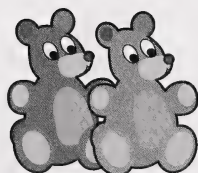


$$3 + 2 = 5$$

Read the following verse aloud twice. This verse is adapted from the traditional verse “A-Hunting We Will Go.”

### Adding We Will Do

Adding we will do,  
Adding we will do.  
We will add 2 teddy bears  
to 5 teddy bears,  
And then we’ll figure out the sum.  
And then we’ll figure out the sum.





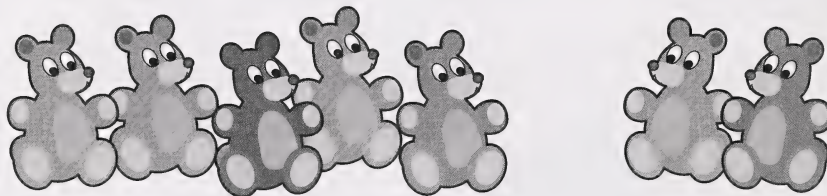
Give the student counters, such as teddy bears or other stuffed animals, to calculate the answer. Then have the child print a number sentence to show the addition situation.

$$2+5=7$$

Repeat the verse, but this time change the order of the numbers that are added.

## ===== Adding We Will Do =====

Adding we will do,  
Adding we will do.  
We will add 5 teddy bears  
to 2 teddy bears,  
And then we'll figure out the sum.  
And then we'll figure out the sum.



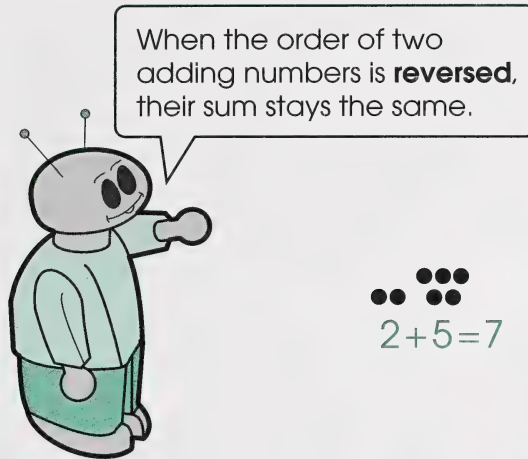
Tell the student to print this second number sentence beside the first one, and see whether the student notices anything about the two number sentences.


$$2+5=7$$


$$5+2=7$$

Discuss the student's observations.

If the student does not point out that the sum is the same, even though the adding numbers have been **reversed**, focus attention on this fact.







  
 $2 + 5 = 7$



  
 $5 + 2 = 7$



Repeat the verse a few more times, using other number combinations and counters. Have the student print a matching number sentence each time.

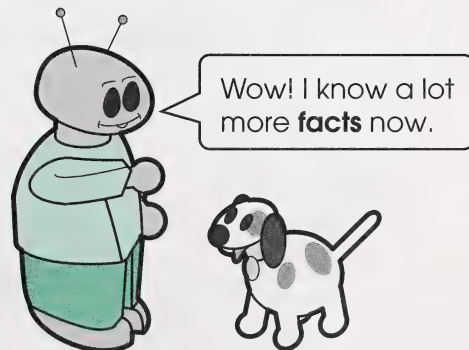
Continue until the student understands that reversing the order of the numbers added does not change the sum or until the child shows signs of fatigue. Return to the activity later, if necessary.

  
 $5 + 3 = 8$   
  
 $3 + 5 = 8$

  
 $1 + 2 = 3$   
  
 $2 + 1 = 3$

  
 $2 + 3 = 5$   
  
 $3 + 2 = 5$

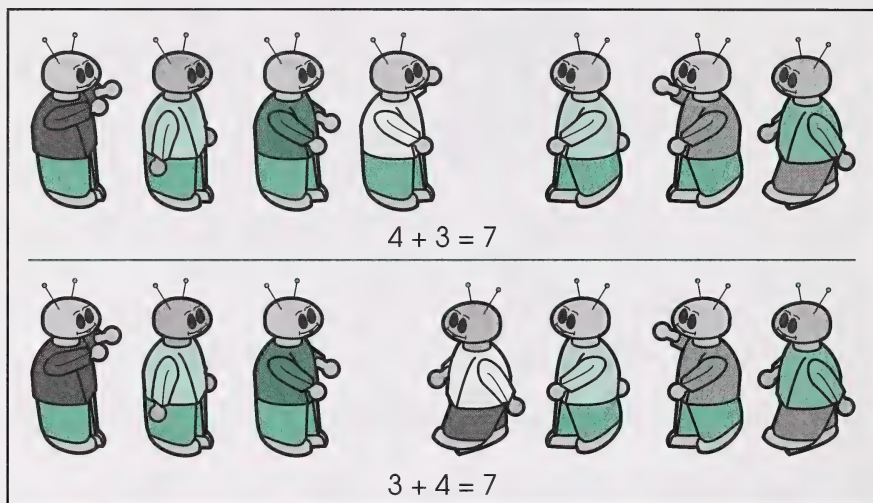
  
 $7 + 3 = 10$   
  
 $3 + 7 = 10$



## Applying the Concept

### 1. Related Addition Pages

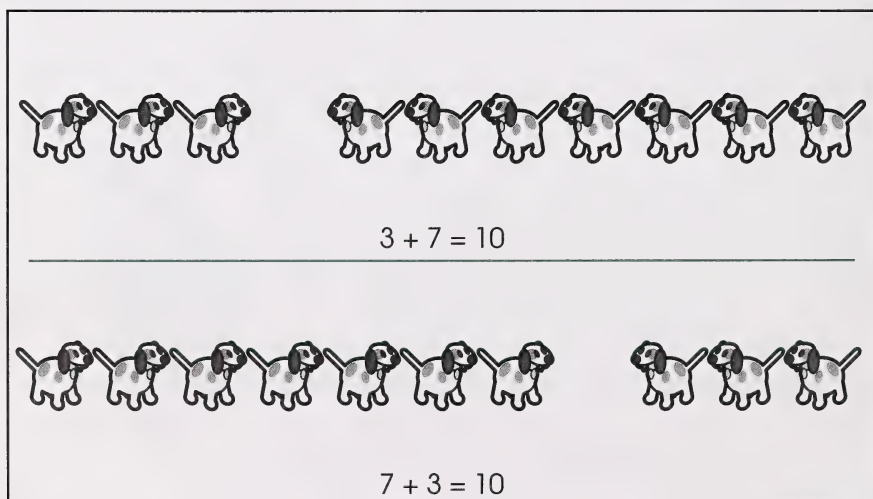
Ask your student to show on unlined paper that the order of two adding numbers makes no difference to the sum. Have the student work with sums no greater than ten.



4 + 3 = 7

3 + 4 = 7

Have the student repeat this activity with different numbers on a second sheet of paper.



3 + 7 = 10

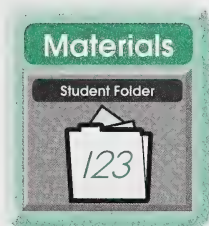
7 + 3 = 10





$$2 + 4 = 6$$

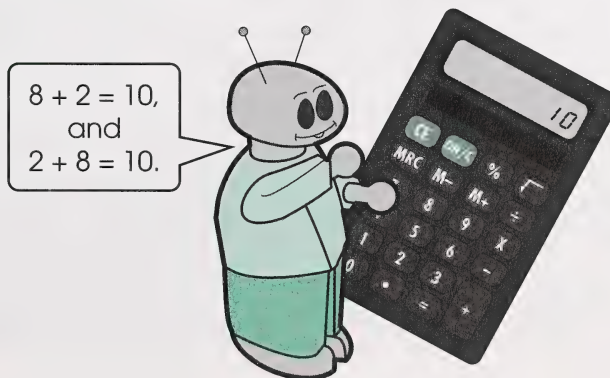
$$4 + 2 = 6$$



Staple the two Related Addition pages together, and then print the student's full name and the abbreviated form of the module and day numbers, M5D6, on the back of the last page. Place in the Student Folder.

## 2. Calculator Time

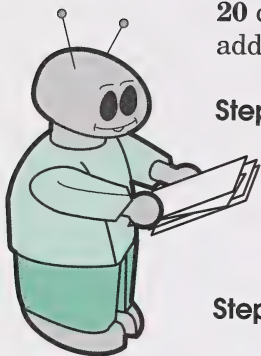
Allow your student five minutes to add two numbers at a time on a **calculator** to reinforce the concept that reversing two adding numbers does not change the sum.



## Enrichment (optional)

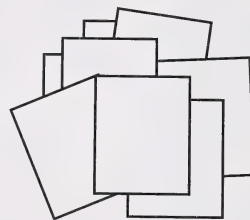
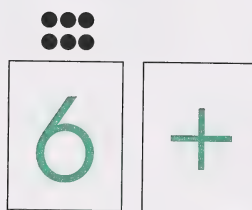
### 1. The Flip Side

For this activity, you will need the zero to ten number cards, 20 counters (ten of one colour and ten of another colour), and the addition-sign and equals-sign cards.

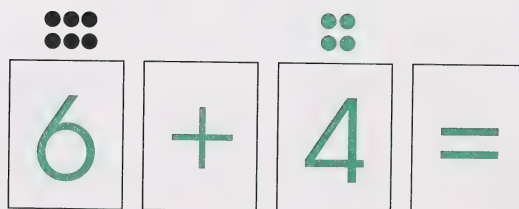


**Step 1:** Shuffle the number cards, and place them face down on the table. Explain to the student that the term **flip side** means the other side, or the reverse, of something.

**Step 2:** Have the student pick a number card, lay it face up on the table, and then place a corresponding number of one colour of counters above the number card. Place the addition-sign card beside the number card.



**Step 3:** Have the student lay out another number card and place a corresponding set of different-coloured counters above that card. Place the equals sign beside the second number card.



**Step 4:** Ask the student to add the two numbers and then print the answer on a blank index card.

$$\begin{array}{c} \bullet \bullet \bullet \\ \boxed{6} + \boxed{4} = \boxed{10} \end{array}$$



**Step 5:** Have your student show the flip side of the number sentence by reversing the order of the adding number cards and counters. Ask whether or not the sum remains the same.

$$\begin{array}{c} \bullet \bullet \\ \boxed{4} + \boxed{6} = \boxed{10} \end{array}$$

**Step 6:** Repeat Steps 2 to 5 with other number cards. Note that the student could be challenged with very high sums during this game. You could select the second card for the student in Step 3 to avoid sums that are beyond the student's abilities, such as  $9 + 10$ .





## 2. The Other Way

**Step 1:** Print a column of addition facts to ten on the left side of a sheet of loose-leaf paper. Draw a vertical line down the middle of the page.

$6+2=8$	
$3+7=10$	
$5+3=8$	
$4+2=6$	
$5+4=9$	

**Step 2:** On the other side of the line, print the related addition facts, with number omitted from each.

$6+2=8$	$2+\underline{\quad}=8$
$3+7=10$	$\underline{\quad}+3=10$
$5+3=8$	$3+\underline{\quad}=8$
$4+2=6$	$2+\underline{\quad}=6$
$5+4=9$	$\underline{\quad}+5=9$

**Step 3:** Have the student print in the missing number for each related addition fact.



**Step 4:** Take turns listing different addition facts and providing the missing numbers.

$8+1=9$	$1+\underline{\quad}=9$
$10+0=10$	$0+\underline{\quad}=10$
$4+5=9$	$\underline{\quad}+4=9$
$3+4=7$	$\underline{\quad}+3=7$
$4+2=6$	$2+4=\underline{\quad}$


## 3. Drawing and Telling Related Stories

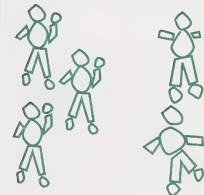
Take turns drawing pictures and telling stories to match the first halves of number sentences, such as the following.

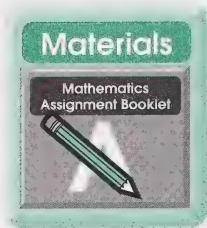
$$2+3=$$

$$3+2=$$

When each picture has been completed, show the total amount by printing the last half of the number sentence.

$$2+3=5$$


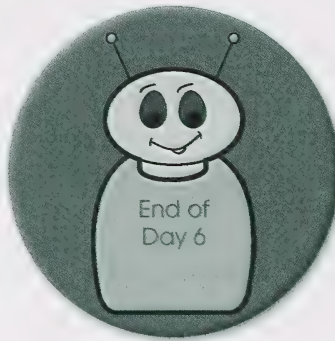
$$3+2=5$$




Turn to Mathematics Assignment Booklet 5A, and follow the directions to do Day 6: Assignment 1.

Next, follow the directions to do Day 6: Assignment 2.

Then complete Day 6: Learning Log. Under Student's Thoughts, help the student complete the sentence starters.





# Day 7



## Calendar Time

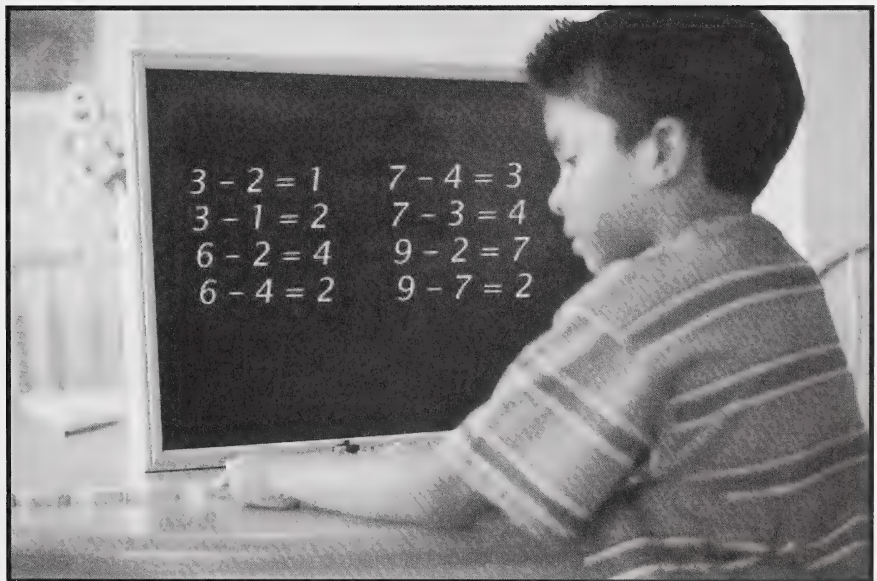
**Time recommended: 10 minutes**

Begin with the usual Calendar Time activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- related subtraction facts



## Vocabulary (spoken only)

difference  
calculate  
reverse  
connection

follow  
reversal  
relationship



### Materials Required

- box containing required materials from the master list
- assorted counters, such as stuffed animals, bingo chips, and interlocking cubes
- calculator
- zero to ten number cards (optional)
- subtraction-sign and equals-sign cards (optional)



## Developing the Concept

Today, your student will focus on related subtraction facts.



The task of learning basic subtraction facts is greatly simplified once the student realizes the following concepts:

- There is a **relationship** between facts.

$$6 - 4 = 2$$

$$9 - 6 = 3$$

$$10 - 2 = 8$$

$$7 - 4 = 3$$

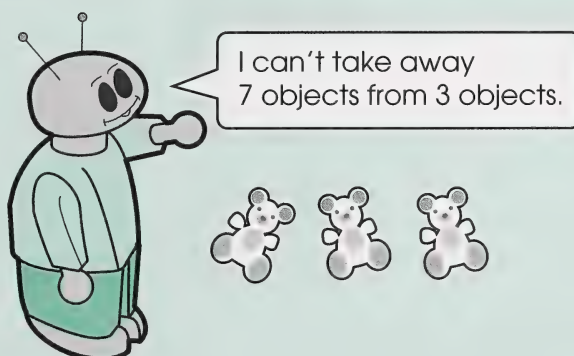
$$6 - 2 = 4$$

$$9 - 3 = 6$$

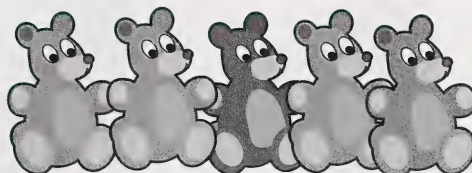
$$10 - 8 = 2$$

$$7 - 3 = 4$$

- A larger number cannot be subtracted from a smaller number; for example, **7 - 3** is not the same as **3 - 7**.



Note that the student will be subtracting larger numbers from smaller ones at a more advanced stage of mathematical learning, but it is not necessary to make this distinction at your student's stage of development.

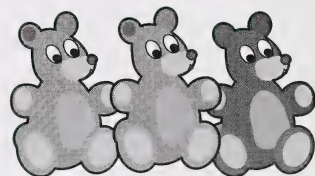
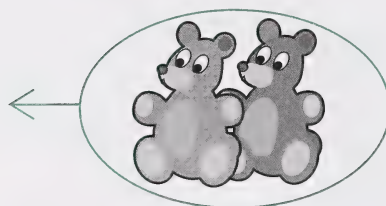




Read the following verse aloud twice. This verse is adapted from the traditional verse “A-Hunting We Will Go.”

### ===== Subtracting We Will Do =====

Subtracting we will do,  
Subtracting we will do.  
We'll subtract 2 teddy bears  
from 5 teddy bears,  
And then we'll figure out the **difference**.  
And then we'll figure out the **difference**.



Give the student counters, such as teddy bears or other stuffed animals, to **calculate** the answer. Then have the child print a number sentence to show the subtraction situation.

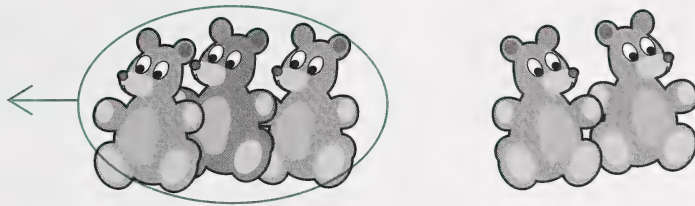
$$5 - 2 = 3$$

Repeat the verse, but this time **reverse** the number that is subtracted and the number that shows the **difference**.



## Subtracting We Will Do

Subtracting we will do,  
Subtracting we will do.  
We'll subtract 3 teddy bears  
from 5 teddy bears,  
And then we'll figure out the difference.  
And then we'll figure out the difference.



Have the student manipulate counters to show the situation and then print the second number sentence beside the first one.

$$5 - 2 = 3$$

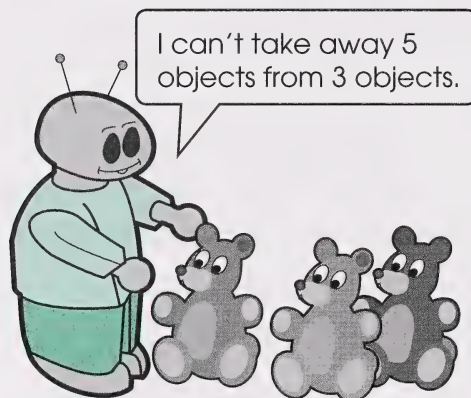
$$5 - 3 = 2$$

Ask whether the student notices anything about the two number sentences. Discuss the student's observations.

If the student does not point out that the number to be subtracted and the number that shows the difference can be reversed, focus attention on this fact.

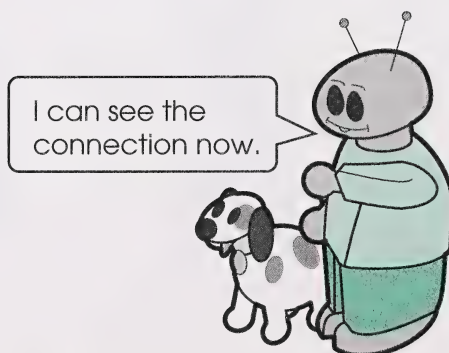
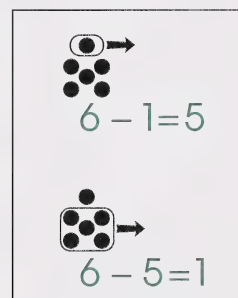
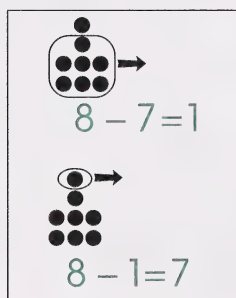


Point out, as well, that a larger number cannot be subtracted from a smaller number.



Repeat the verse a few more times, reversing the number that is subtracted with the number that shows the difference. Have the student print a matching number sentence each time.

Continue until the student sees a **connection** between related subtraction facts or until the child shows signs of fatigue. Return to the activity later, if necessary.



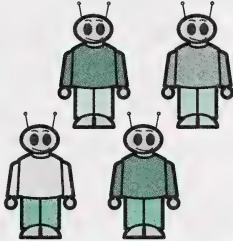
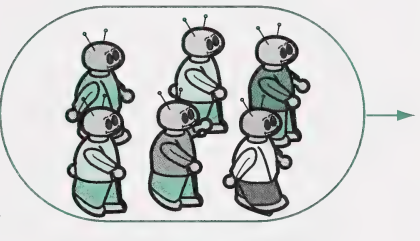
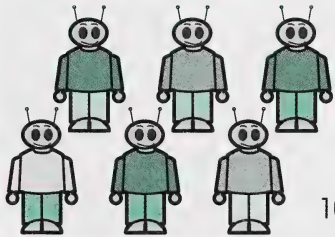
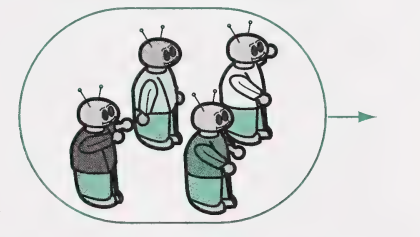


## Applying the Concept


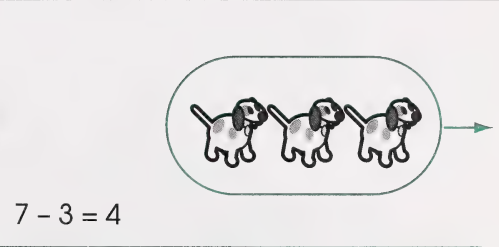

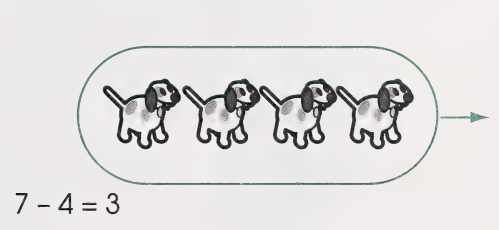
### 1. Related Subtraction Pages

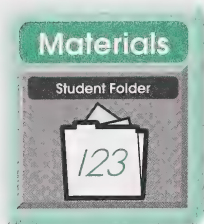
Ask your student to show how a number that is subtracted and a number that shows the difference can be reversed.

Have the student work with differences no greater than ten.

	$10 - 6 = 4$	
	$10 - 4 = 6$	

Have the student **follow** a similar procedure with different numbers on a second sheet of paper.

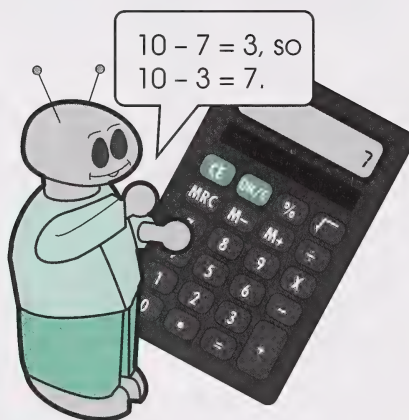
	$7 - 3 = 4$	
	$7 - 4 = 3$	



Staple the two Related Subtraction pages together. Then print the student's full name and the abbreviated form of the module and day numbers, M5D7, on the back of the last page. Place in the Student Folder.

## 2. Calculator Time

For about five minutes, have your student use a calculator to subtract one number from another number that is no greater than ten. Then make the difference become the number that is subtracted, and have the student observe what happens.

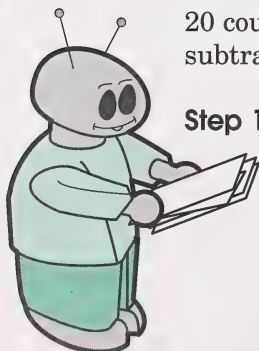


## Enrichment (optional)

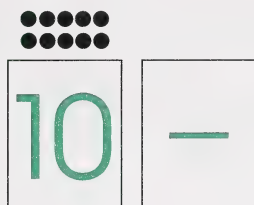
### 1. The Flip Side

For this activity, you will need the zero to ten number cards, 20 counters (ten of one colour and ten of another colour), and the subtraction-sign and equals-sign cards.

**Step 1:** Shuffle the number cards, and place them face down on the table.



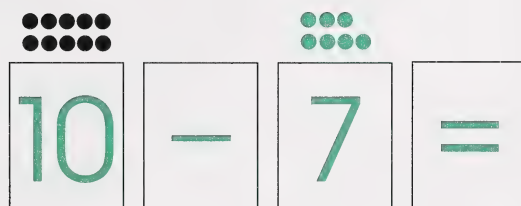
**Step 2:** Have the student pick a number card, lay it face up on the table, and then place a corresponding number of one colour of counters above the number card. Place the subtraction-sign card beside the number card.



**Step 3:** Have the student pick another number card and place it to the right of the subtraction-sign card.

If the second number picked is larger than the first number, return it to the bottom of the pile. Continue picking cards until a smaller number is chosen. Then place a corresponding set of different-coloured counters above that card.

Place the equals sign beside the second number card.



**Step 4:** Ask the student to subtract the second number from the first number and print the answer on a blank index card.





**Step 5:** Have your student show the flip side of the number sentence by moving the cards and counters to reverse the order of the number that is subtracted and the number that is the difference.



$$\begin{array}{c} \bullet \bullet \bullet \bullet \bullet \\ \bullet \bullet \bullet \bullet \bullet \end{array} \quad \boxed{10} \quad \boxed{-} \quad \begin{array}{c} \bullet \bullet \bullet \\ \bullet \bullet \bullet \end{array} \quad \boxed{3} \quad \boxed{=} \quad \boxed{7}$$

Question your student about this **reversal** of numbers to be sure the student understands the **relationship**.

**Step 6:** Repeat Steps 2 to 5 with other number cards.

## 2. The Other Way

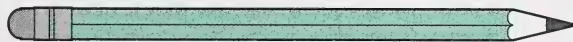
**Step 1:** Print a column of subtraction facts to ten on the left side of a sheet of loose-leaf paper. Draw a vertical line down the middle of the page.

$10 - 7 = 3$	
$8 - 5 = 3$	
$7 - 4 = 3$	
$5 - 1 = 4$	
$6 - 2 = 4$	
$9 - 3 = 6$	

**Step 2:** On the other side of the line, print the related subtraction facts with one number omitted from each.

$10 - 7 = 3$	$10 - \underline{\quad} = 7$
$8 - 5 = 3$	$8 - 3 = \underline{\quad}$
$7 - 4 = 3$	$7 - 3 = \underline{\quad}$
$5 - 1 = 4$	$5 - \underline{\quad} = 1$
$6 - 2 = 4$	$6 - \underline{\quad} = 2$
$9 - 3 = 6$	$9 - 6 = \underline{\quad}$

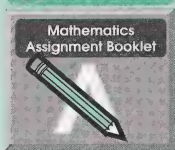
**Step 3:** Have the student print in the missing number for each related subtraction fact.



**Step 4:** Take turns listing different subtraction facts and related facts and providing the missing numbers.

$9 - 8 = 1$	$9 - \underline{\quad} = 8$
$8 - 6 = 2$	$8 - 2 = \underline{\quad}$
$6 - 4 = 2$	$6 - 2 = \underline{\quad}$
$3 - 2 = 1$	$3 - 1 = \underline{\quad}$
$5 - 4 = 1$	$5 - \underline{\quad} = 4$

### Materials



Turn to Mathematics Assignment Booklet 5A, and follow the directions to do Day 7: Assignment 1.

Next, follow the directions to do Day 7: Assignment 2.

Then complete Day 7: Learning Log. Under Student's Thoughts, help the student complete the sentence starters.





# Day 8



## Calendar Time

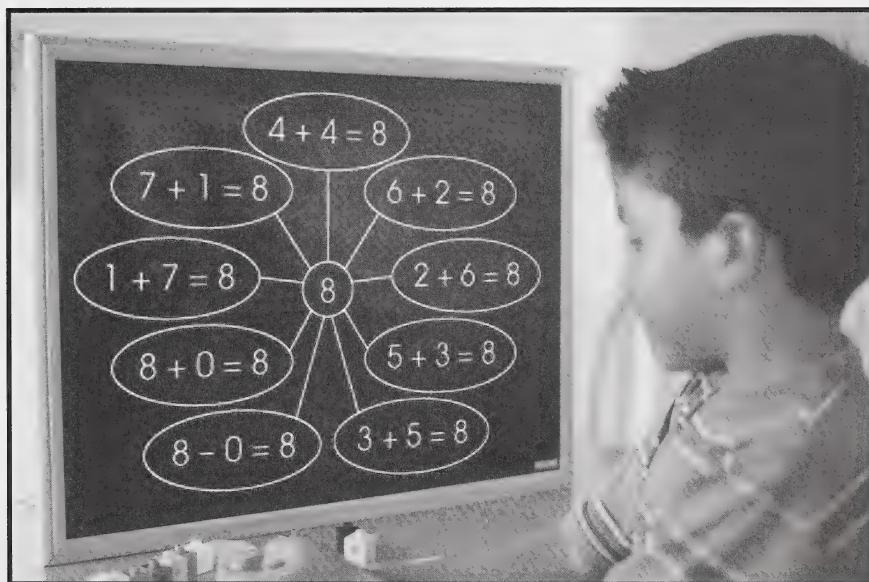
**Time recommended: 10 minutes**

Begin with the usual Calendar Time activities.

## Focus for Today

**Time recommended: 45 minutes**

- expressing sums and differences to ten in different ways



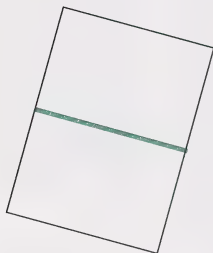
## Vocabulary (spoken only)

equal  
calculations  
commutativity  
counting forward  
doubles

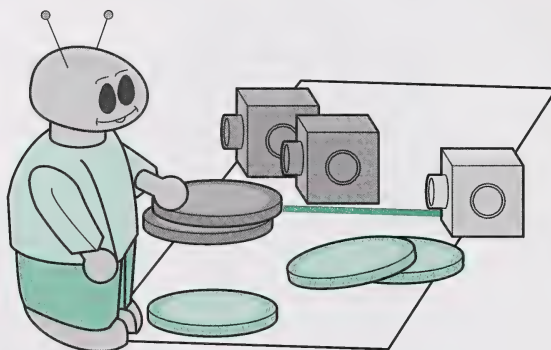
one more  
one less  
commutative property  
addends  
counting backward

no more  
accordingly  
similarities  
differences

## Materials Required

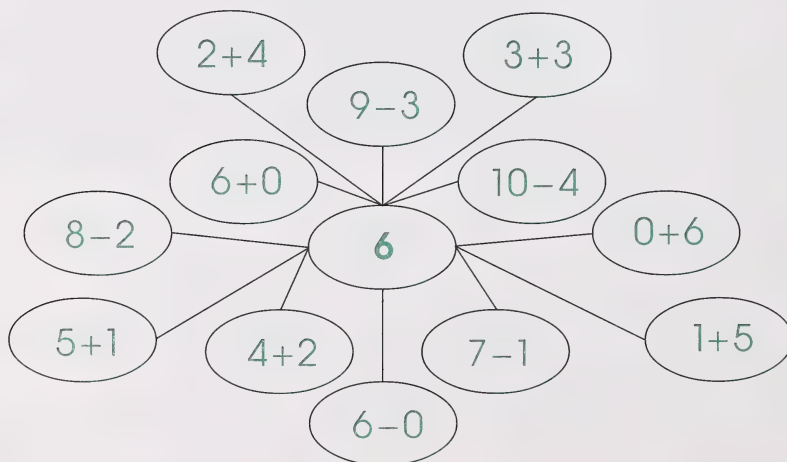


- box containing required materials from the master list
- two-part mat made by using a felt marker to divide a piece of construction paper into two **equal** parts
- ten round counters, such as pennies, bingo chips, or paper circles
- zero to ten number cards



## Developing the Concept

In previous units, the student found only the same sum in different ways. Today, your student will find the same sum and difference in different ways.



Finding the same sums and differences in different ways will help your student develop an understanding and proficiency with **calculations**.



While your student is working today, observe the addition and subtraction strategies that are being used. These strategies are repeated below for your reference.

Your student might use the following addition strategies:

- **commutativity**
- **doubles**
- **counting forward**
- **one more or one less**

The task of learning basic addition facts is simplified for students because of a number quality known as the **commutative property**. This property states that changing the order of the **addends** does not affect the sum. Your student is already familiar with this number property.

$$2 + 3 = 5$$

$$3 + 2 = 5$$

### Counting Forward

This addition strategy involves starting with the larger addend, counting forward with the number of the second addend, and stating the total amount. While counting forward could be described as a “natural” strategy for children, they need guidance in starting with the larger addend. Many children have a tendency to start with the smaller number and count forward with the larger number. For example, with the problem  $5 + 3$ , the student would start with 3 and count forward 5, instead of doing the reverse. An understanding of the commutative property can help with this process.

$$5 + 3 = \underline{\quad}$$

1, 2, 3, 4, 5, 6, 7, 8

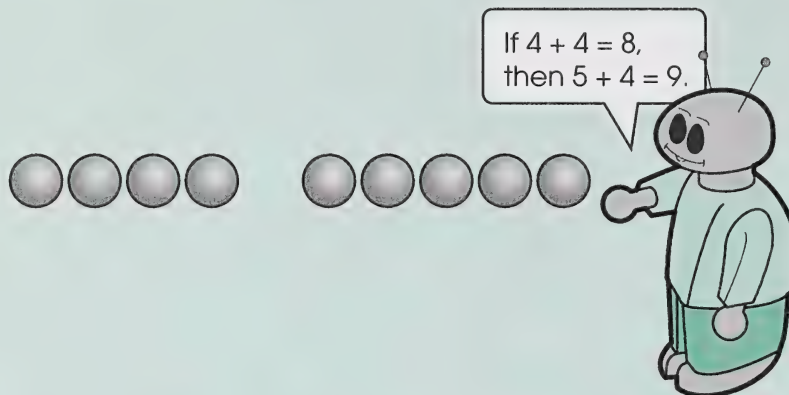
This strategy is most effective when the number to be added is small.

Continued ...



## Doubles, One More, or One Less

Observing that an unknown fact is one more or one less than a known fact is helpful. Learning the double facts, for example,  $4 + 4 = 8$ , is easy for most children. This knowledge can then be used to calculate basic facts such as  $5 + 4 = 9$ , because that sum is one more than  $4 + 4 = 8$ .



## Subtraction Strategies

### Making a Connection Between Addition and Subtraction

For each addition fact, there is a related subtraction fact. Help your student recognize, think about, and use the relationship between addition and subtraction facts.

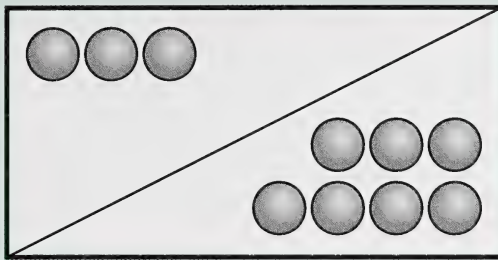
For example, if the problem is  $10 - 7$ , think as follows.

$10 - 7 = \underline{\hspace{2cm}}$  Think,  $7 + 3 = 10$  So,  $10 - 7 = 3$

Continued ...



The relationship between addition and subtraction allows the basic facts to be grouped into “families.” Except for the doubles, each family consists of four related facts, as shown in the example below.



$$3 + 7 = 10 \quad 10 - 3 = 7$$

$$7 + 3 = 10 \quad 10 - 7 = 3$$

Doubles families consist of two related facts. For example,  $4 + 4 = 8$     $8 - 4 = 4$

### Counting Backward

Counting backward involves counting from the total amount to the number being subtracted. This strategy is not as easy for most children as counting forward. To help the student use this strategy, give lots of opportunities to count backward and to write the numbers in order from a specific starting point, for example, 10, 9, 8 .... Using manipulatives can also help the student count backward. This strategy is most effective when the number to be subtracted is 1, 2, or 3.

$$6 - 2 = \underline{\quad\quad}$$



6, 5, 4

### Counting Forward

To use this strategy for subtracting, the student can begin counting from the number that is being subtracted and go forward to the total amount, noting the number that is added through counting. For example, if the problem is  $8 - 6$ , think as follows.

$$8 - 6 = \underline{\quad\quad} \quad \text{Think, 6, } \underline{7}, \underline{8} \quad \text{So, } 8 - 6 = 2$$

This strategy is best used in situations where the difference is small.

Continued ...

## Working with Zero

Zero added to or subtracted from any other number does not change that number. Children usually understand this after many experiences with real objects in which they see that any time they add or subtract **no more**, they have the same amount.



$1+0=\boxed{1}$

$0+1=\boxed{1}$

$1-0=\boxed{1}$



$2+0=\boxed{2}$

$0+2=\boxed{2}$

$2-0=\boxed{2}$



$3+0=\boxed{3}$

$0+3=\boxed{3}$

$3-0=\boxed{3}$



$4+0=\boxed{4}$

$0+4=\boxed{4}$

$4-0=\boxed{4}$

Provide your student with ten round counters, for example pennies, and a two-part mat similar to the one that follows. The student will work with sums and differences no greater than ten.



Ask the student to use pennies on the mat to model the following addition story.

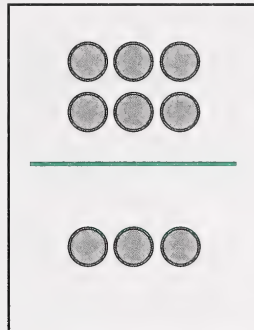


Susan is going to the store for candies. She takes 6 pennies from her piggy bank and 3 pennies from her pocket.

How many pennies does she take to the store?



Monitor the placement of pennies on the mat. Discuss and correct any errors. Then have the student print the corresponding number sentence on a piece of paper.

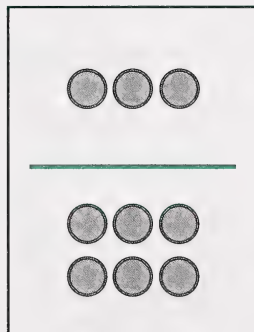


$$6+3=9$$

Tell your student to listen to a second story and place the pennies on the mat **accordingly**.

Sami is going to the store for candies.  
He takes 3 pennies from his piggy bank and  
6 pennies from his pocket.

How many pennies does he take to the store?



Continue to monitor the placement of pennies on the mat. Discuss and correct any errors. Then have the student print the corresponding number sentence underneath the first one.

$$6+3=9$$

$$3+6=9$$

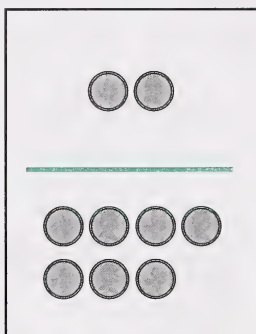
Ask the student to comment on the **similarities** and **differences** between the two addition stories and number sentences. If no mention is made about the order of the two addends being changed while the sum remains the same, focus the student's attention on this fact.

Ask the child to listen to and model a third story.

Mei is going to the store for candies.  
She takes 2 pennies from her piggy bank and  
7 pennies from her pocket.

How many pennies does she take to the store?

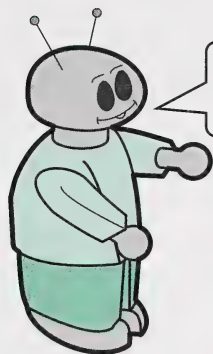
Check the student's placement of pennies on the mat. Discuss and correct any errors. Then have the student print the corresponding number sentence underneath the second one.



$$\begin{array}{l} 6+3=9 \\ 3+6=9 \\ 2+7=9 \end{array}$$

Ask the student to comment on the similarities and differences among the three addition stories and number sentences. If no mention is made about the sum being the same even though the addends are different, focus the student's attention on this fact.

Tell a fourth story that would demonstrate the number sentence  $7 + 2 = 9$ , and have your student record this sentence. You could use your student's name in this story.



Wow! All these number sentences add up to 9.

$$6 + 3 = 9$$

$$3 + 6 = 9$$

$$2 + 7 = 9$$

$$7 + 2 = 9$$

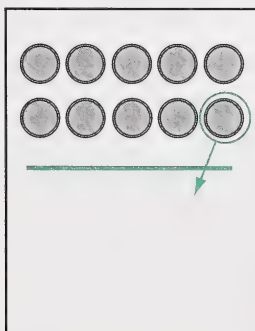
Now tell your student a subtraction story.

Luis went to the store with 10 cents.

He spent 1 cent on candies.

How many cents does he have left?

Monitor the take-away situation on the mat. Discuss and correct any errors. Then have the student print the subtraction sentence,  $10 - 1 = 9$ , underneath the previous addition sentence.



$$6 + 3 = 9$$

$$3 + 6 = 9$$

$$2 + 7 = 9$$

$$7 + 2 = 9$$

$$10 - 1 = 9$$



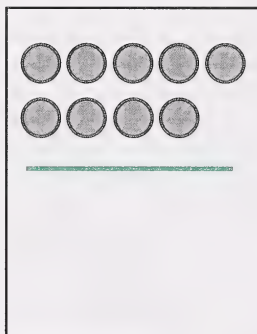
Ask the student to comment on the similarities and differences among the five stories and their corresponding number sentences.

Now, instruct the student to illustrate this final story.

Hans went to the store with 9 cents.  
He decided not to spend any money.

How many cents does he have left?

Monitor the take-away situation on the mat. Discuss and correct any errors. Then have the student print the subtraction sentence,  $9 - 0 = 9$ , underneath the previous one.



$$6 + 3 = 9$$

$$3 + 6 = 9$$

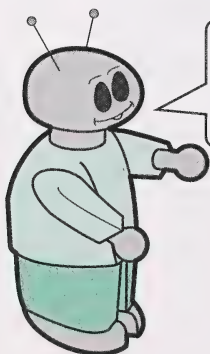
$$2 + 7 = 9$$

$$7 + 2 = 9$$

$$10 - 1 = 9$$

$$9 - 0 = 9$$

Ask the student to comment on the similarities and differences among the six stories and their corresponding number sentences.



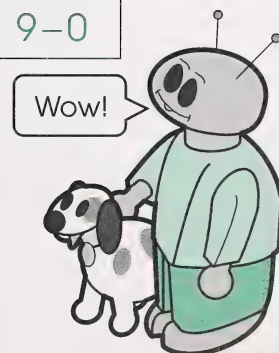
Look at all the different ways to get the same number as a sum or a difference.

## Applying the Concept

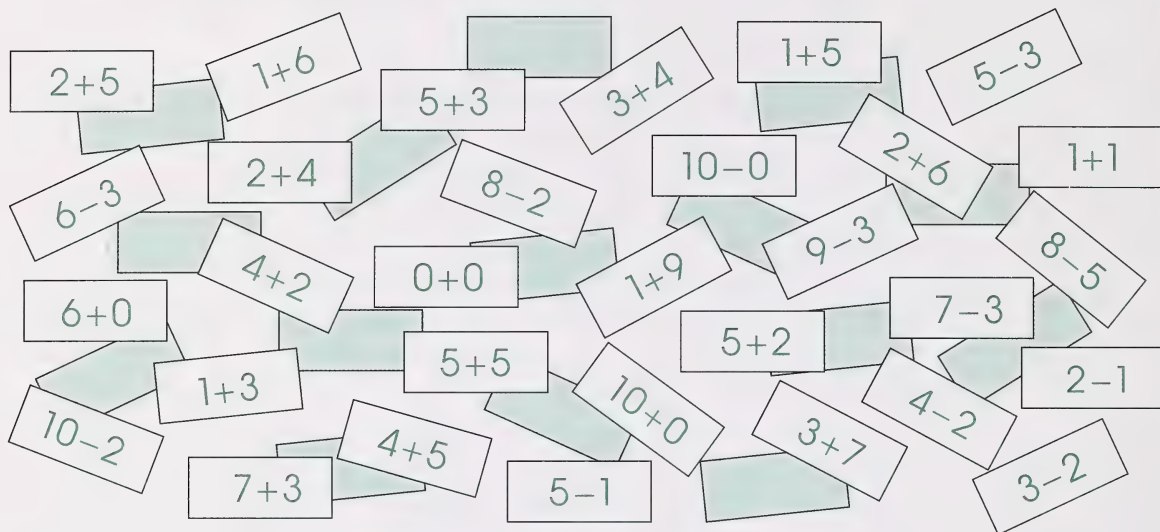
Help your student use blank index cards to print at least 50 different ways that show the same sum or difference for the numbers zero to ten.

Use the following illustration to guide you. Only some possibilities are shown. There are many others.

$0+0$	$2-0$	$2+2$	$10-5$	$7-1$	$1+7$	$5+4$
$0-0$	$8-6$	$5-1$	$2+3$	$9-3$	$7+1$	$4+5$
$1+0$	$7-5$	$1+3$	$3+2$	$3+4$	$8+0$	$10-1$
$1-0$	$5-3$	$3+1$	$6-1$	$7-0$	$8-0$	$5+5$
$2-1$	$6-4$	$4+0$	$9-4$	$8-1$	$4+4$	$9+1$
$5-4$	$2+1$	$4-0$	$1+5$	$7+0$	$10-2$	$1+9$
$6-5$	$1+2$	$10-6$	$5+1$	$4+3$	$9-1$	$10-0$
$7-6$	$4-1$	$9-5$	$5+0$	$2+5$	$1+8$	$10+0$
$1+1$	$5-2$	$1+4$	$5-0$	$5+2$	$8+1$	$6+0$
$3-1$	$3+0$	$4+1$	$10-4$	$1+6$	$9+0$	
$2+0$	$3-0$	$6-0$	$3+3$	$6+1$	$9-0$	



When the task is completed, shuffle the zero to ten sum-and-difference cards. Place them face up, in random order, around the table.



Ask your student to shuffle the zero to ten number cards and place them in a pile face down on the table. Instruct the student to pick one number card from the pile and place it face up.

For example, the child could turn up the number seven.



Challenge your student to find all the same-sum-and-difference cards for the chosen number and place them in a row beneath it.



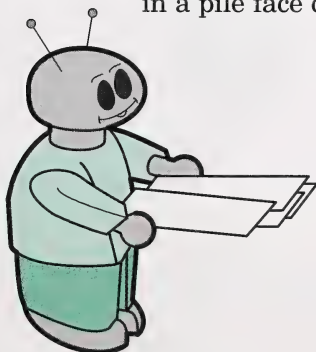
Repeat the process until all the sum-and-difference cards have been assigned to a number. Only some of the possibilities are shown below. There are many others.

0	2	3	4	5	6	7	8	9	10
0+0	1+1	2+1	2+2	1+4	1+5	3+4	1+7	1+8	5+5
0-0	3-1	1+2	5-1	4+1	5+1	7-0	7+1	8+1	9+1
1	2+0	4-1	1+3	5+0	6+0	8-1	8+0	9+0	1+9
	2-0	5-2	3+1	5-0	6-0	7+0	8-0	9-0	10-0
1+0	8-6	3+0	4+0	10-5	10-4	4+3	4+4	5+4	10+0
1-0	7-5	3-0	4-0	2+3	3+3	2+5	10-2	4+5	
2-1	5-3		10-6	3+2	7-1	5+2	9-1	10-1	
5-4	6-4		9-5	6-1	9-3	1+6			
6-5	9-7			9-4		6+1			
7-6									

## Enrichment (optional)

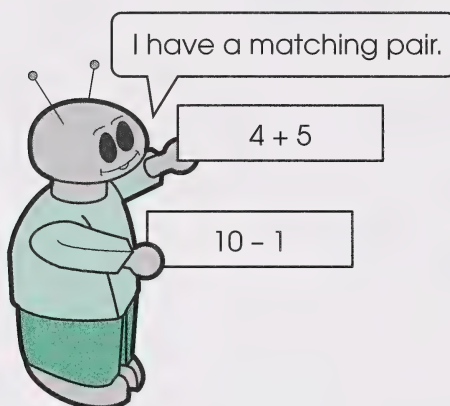
### 1. Go Fish

**Step 1:** Shuffle all the zero to ten sum-and-difference cards, and deal five cards to each player. Place the remaining cards in a pile face down on the table.

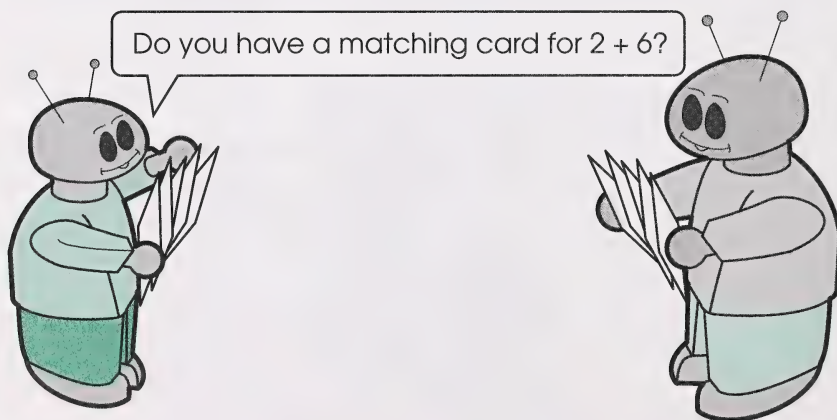


**Step 2:** Have all players check their hands to see if there are two cards that show the same sum or difference, such as  $4 + 5$  and  $10 - 1$ .

If a match is made, remove the two cards from the hand and set them to the side.

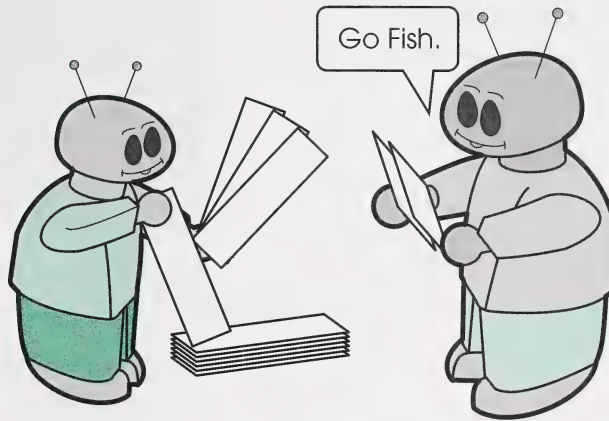


**Step 3:** Take turns trying to make matching pairs by checking your hand, asking each other for a matching card, or picking a card from the pile. If you do not have a match for the card  $2 + 6$ , for example, you could ask the other players a question, such as the following.



If another player has a matching card, the card is given to you. You can then make a matching set and place it to the side.

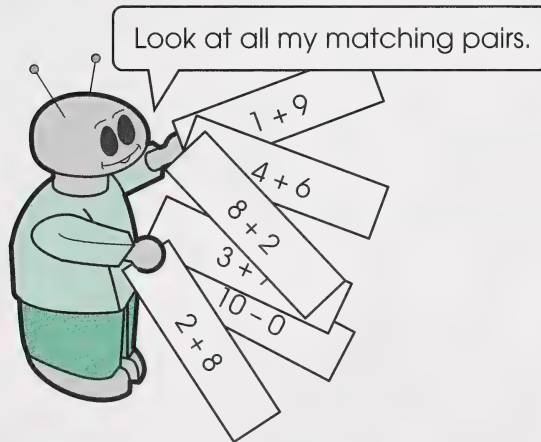
If other players do not have a matching card, they say “Go Fish.” Then you can pick a new card from the pile.



If you then have a matching pair, place them with your other pairs, and the next player can take a turn.

**Step 4:** Play until there are no cards left to draw from the pile.

The player with the most cards wins.

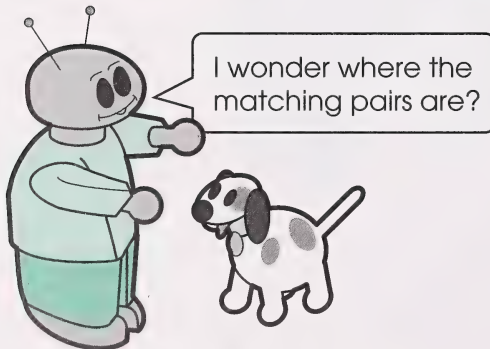
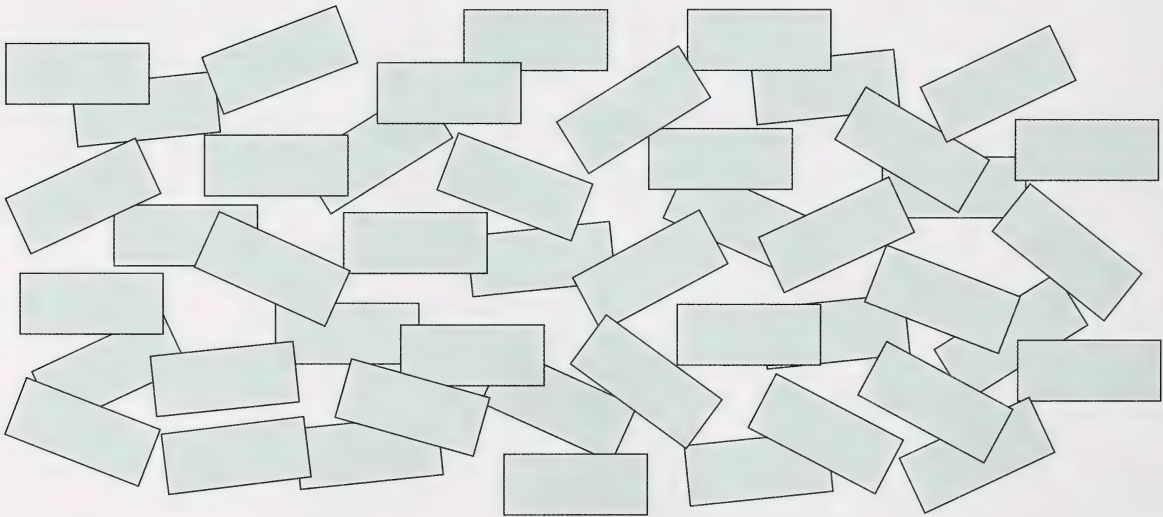






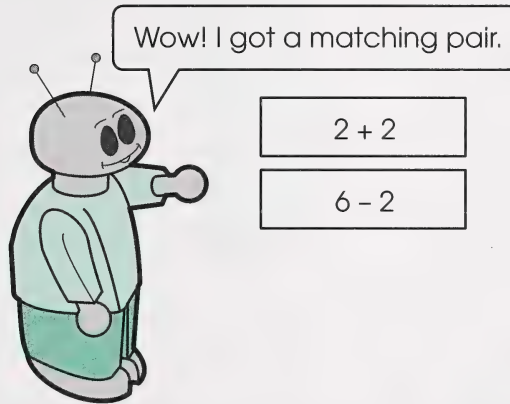
## 2. Concentration

**Step 1:** Shuffle the zero to ten sum-and-difference cards and spread them out face down on the table.

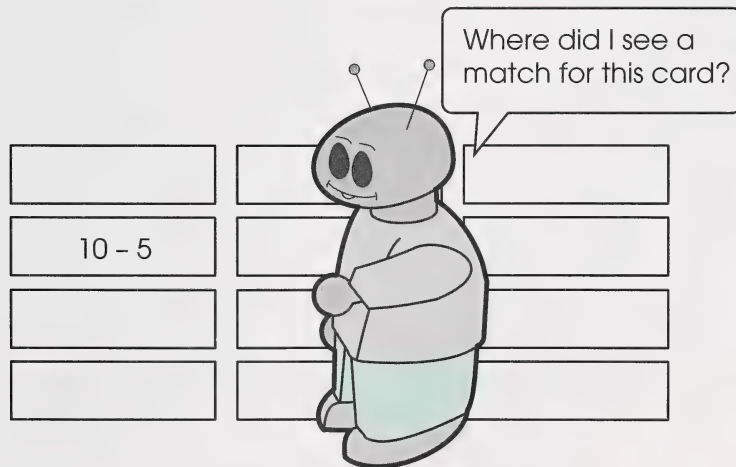


**Step 2:** Tell the student to turn over any two cards.

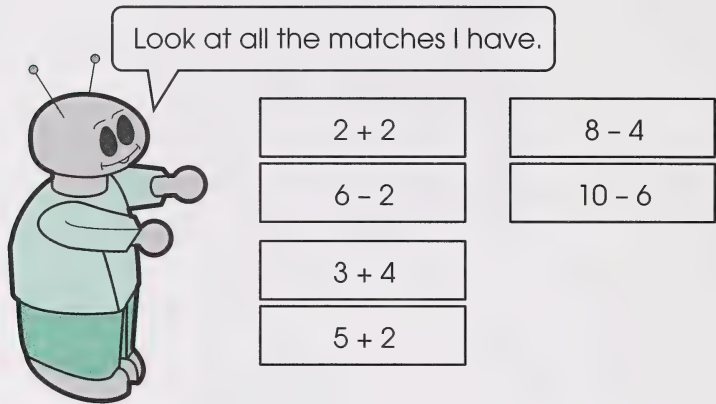
If the cards match, for example,  $6 - 2$  and  $2 + 2$ , have the student place them in a separate pile away from the game area and repeat the process, trying to find a second matching pair.



If the cards do not match, the student can turn them face down again. Then another player can have a turn trying to match cards or remember where a match is located.

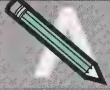


**Step 3:** Play until all possible matches have been made. The winner is the player with the most matches.



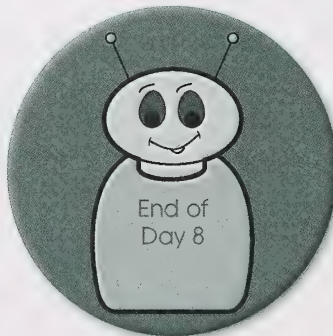
## Materials

Mathematics  
Assignment Booklet



Turn to Mathematics Assignment Booklet 5A, and follow the directions to do the assignment for Day 8.

Then complete Day 8: Learning Log. Under Student's Thoughts, help the student complete the sentence starter.





# Day 9



## Calendar Time

**Time recommended: 10 minutes**

Begin with the usual Calendar Time activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- problem solving: discovering different ways to go from one place to another

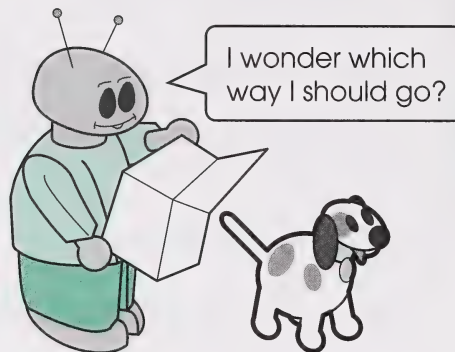


## Vocabulary (spoken only)

ways/way  
solution  
maze  
dots

### Materials Required

- box containing required materials from the master list
- maze activity books (optional)



### Developing the Concept



Today's activities are meant to develop your student's awareness that there could be several acceptable **ways** to solve a problem, not just one correct **way**.

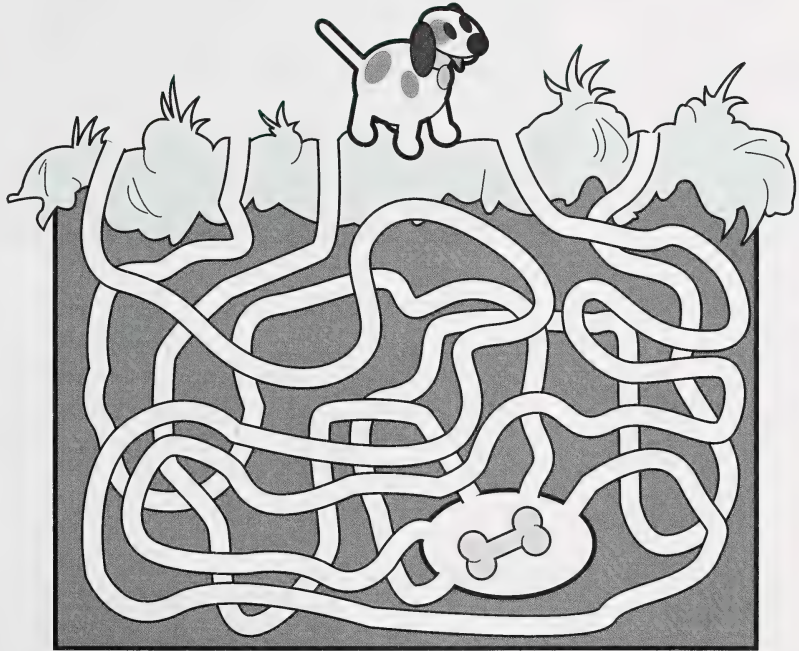
Challenge your student to look beyond the initial **solution** to see if there are other possible ones.



Today, your student will be challenged to discover different ways to go from one place to another. Introduce the topic with the following discussion.



This dog's name is C-Spot.  
C-Spot wants to get his bone.



Move your finger along the paths to help C-Spot find the **way** to his bone.

Wait while the student traces the paths.

Did all the paths lead to the bone? (no)

What happened when you followed some of the paths? (They ended before the bone.)

How many **ways** are there to the bone? (2)

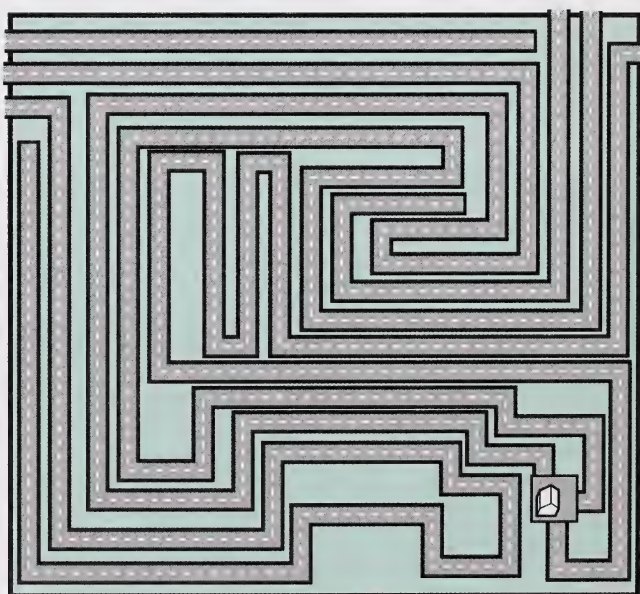
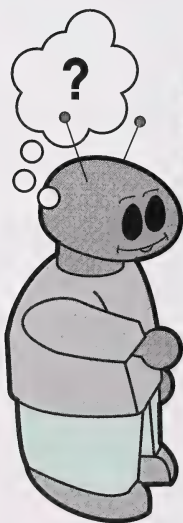
When we go to the playground, there are several different ways we could go.





I will draw some of the ways we could go.

Use a piece of blank paper to draw a simple map that shows your student three routes to a playground. Note various landmarks that the student would recognize, such as bridges, traffic signs, or friend's houses.

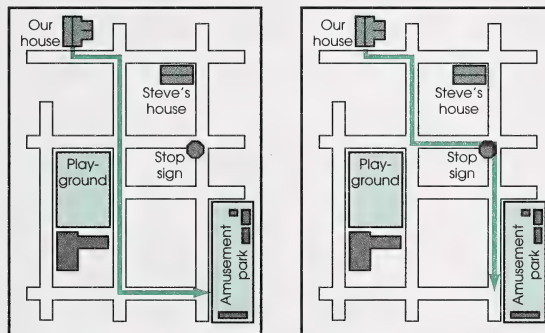


## Applying the Concept

### Different Ways Booklet

Discuss some possible ways to get from home to other places, for example, a friend's house, the library, the store, and the playground. Ask your student to choose one of the places to use in a Different Ways booklet.

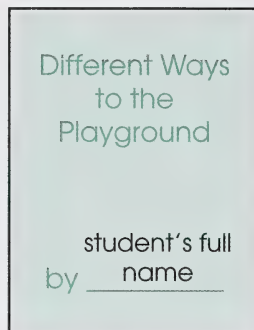
**Step 1:** On separate sheets of loose-leaf paper, help the child draw different ways to the chosen spot. Two or three different ways are sufficient.



**Step 2:** Use two pieces of construction paper for the front and back covers. Help the student print a title on the cover page. You could use the title **Different Ways to** \_\_\_\_\_. Help your student fill in the blank space with the name of the chosen place.

Different Ways  
to the  
Playground

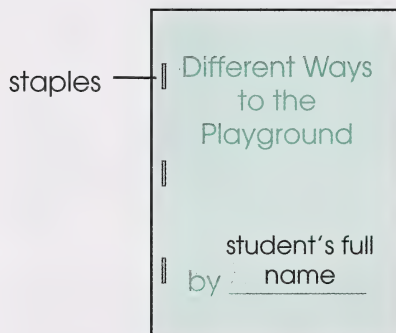
Have the child's first and last names printed below the title.



Different Ways  
to the  
Playground

student's full  
by \_\_\_\_\_ name \_\_\_\_\_

**Step 3:** Place the two or three different pathway illustrations between the front and back covers, and then staple the booklet together on the left side.



staples —

Different Ways  
to the  
Playground

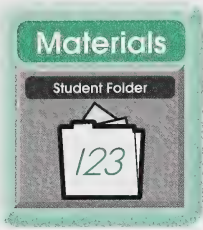
student's full  
by \_\_\_\_\_ name \_\_\_\_\_

**Step 4:** On the back of the booklet, have the student print the abbreviated form of the module and day numbers, M5D9.



M5 D9



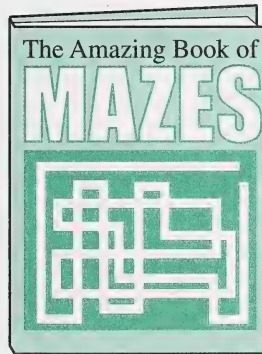


**Step 5:** Place the booklet in the Student Folder.

## Enrichment (optional)

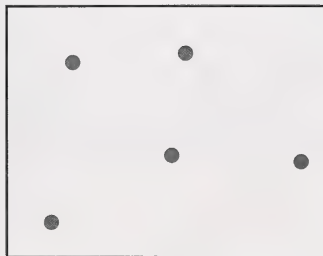
### 1. Maze Activity Books

Consider obtaining some commercial **maze** activity books for the student. These will provide hours of fun and ways to develop problem-solving skills.

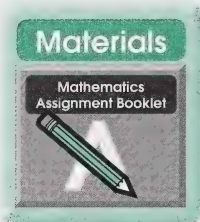
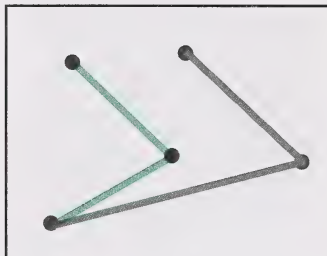


### 2. How Many Lines?

**Step 1:** Randomly draw five **dots** on a blank sheet of paper.

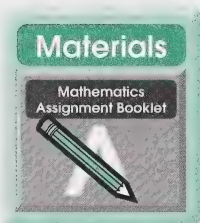


**Step 2:** Have the student use different-coloured crayons to show different ways to connect the dots, as in the example that follows.

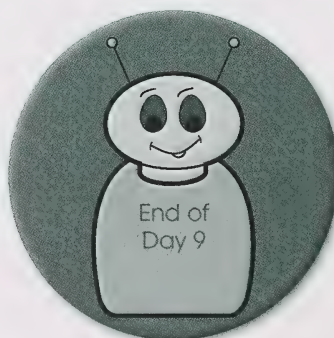


Turn to Mathematics Assignment Booklet 5A, and follow the directions to do the assignment for Day 9.

Then complete Day 9: Learning Log. Under Student's Thoughts, help your student finish the sentence starters.



At the end of Mathematics Assignment Booklet 5A, follow the directions to complete Day 9, Student Folder Items. Take the required items from your Student Folder. Submit these items and Assignment Booklet 5A to your student's teacher for marking at the time the teacher has requested them.



# Day 10



## Calendar Time

**Time recommended: 10 minutes**

Begin your lesson with the daily calendar activities and a few additional ones.

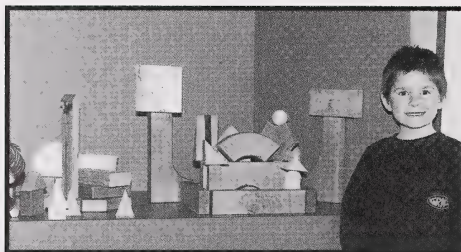
## Focus for Today

**Time recommended: 45 minutes**

- observe and build geometric solids according to various properties
- identify and describe triangles, rectangles, squares, and circles

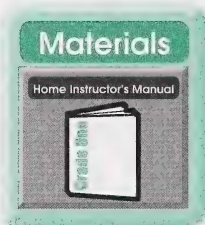






## Vocabulary (spoken only)

The following words may be used in context throughout today's lesson and, if introduced to the student, are spoken only, so it is not necessary to review the list with the child. Students at this level are not required to read, spell, or write vocabulary words, with the exception of the number words from zero to ten. Refer to the glossary in the Home Instructor's Manual to clarify any of these terms.

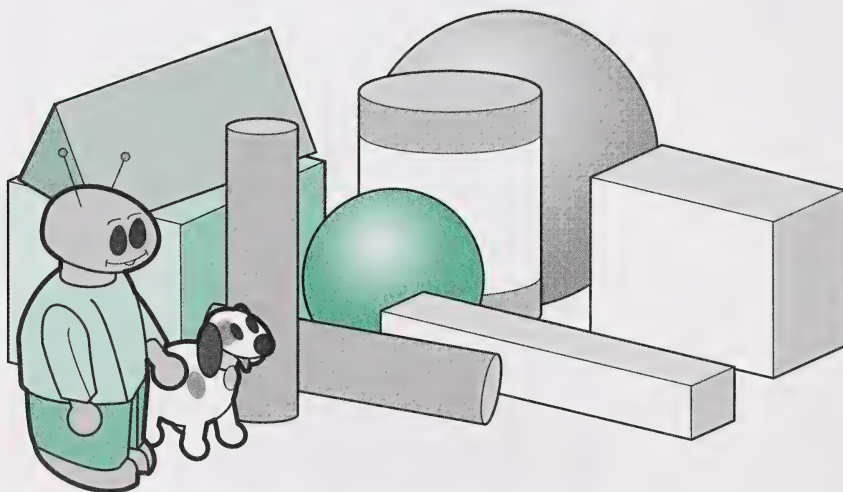


## Geometric Solids

sphere  
prism  
cube

cylinder  
cone  
pyramid

rectangular prism  
triangular prism



## Geometric Shapes

square  
rectangle/rectangular

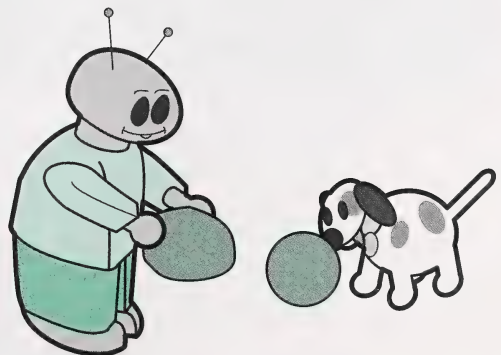
circle/circular  
triangle/triangular

## General Vocabulary

geometric solids	opposite sides	roll
geometric shapes	equal	stack
geometric properties	length	pointed/point
geometry	width	corners
round	shortest	edges
flat	longest	sides
curved	lines	shape
solid	measure	flat face
straight sides	height	

## Materials Required

- box containing required materials from the master list
- collection of geometric solids, previously used in Module 3
- homemade or commercial modelling dough or clay (You could use the recipe for uncooked dough from Module 3, Day 1 or the recipe for cooked dough from the Appendix of the Home Instructor's Manual.)
- *Classics for Children* compact disc (optional) (You will have this musical recording if your student is enrolled in the Grade One Thematic program.)
- library books (optional)



Keep your collection of geometric solids for future activities. A plastic tub or cardboard box makes a convenient container for this purpose.

## Developing the Concept

In Module 3, your student made geometric solids from modelling dough. Today, the student will examine the **geometric properties** of such solids.

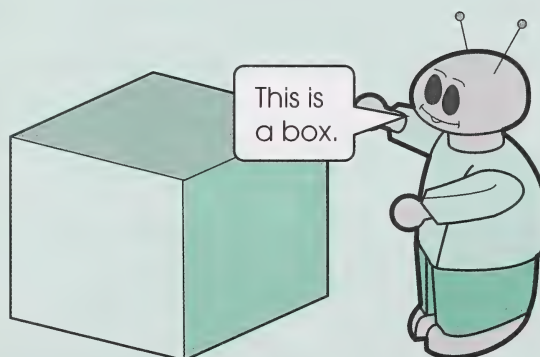
### Activities

#### Teaching Tip



To develop your student's understanding of **geometry** and spatial sense, engage the child in activities that involve seeing, hearing, and touching. Today, your student will use these three senses to make models of geometric solids.

Depending upon the level of geometric knowledge, you can identify the geometric solids by common terms, such as ball, box, and can, or by mathematical terms, such as **sphere**, **prism**, **cube**, and **cylinder**.



Give your student about five minutes to practise handling a lump of homemade or commercial modelling dough or clay. Say that you will give directions and the student will follow them with eyes closed. For example, one direction is to make the dough into a **round** ball.







You may find that having your student listen to relaxing background music will enhance this learning experience.

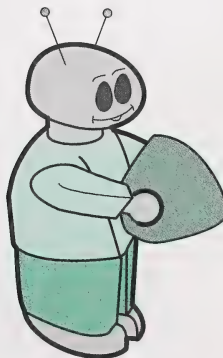
If your student is registered in the Grade One Thematic program, listen to your compact disc *Classics for Children* for suitable instrumental music.



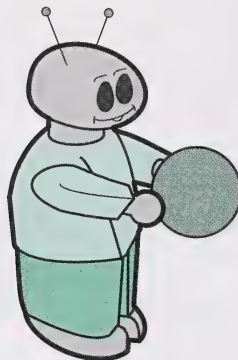
## Modelling-Dough Geometric Solids

Pause while your student accomplishes each task that follows.

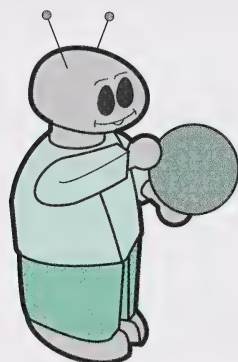
**Direction 1:** Squeeze the dough as **flat** as you can make it.



**Direction 2:** Mould your dough into a round ball.



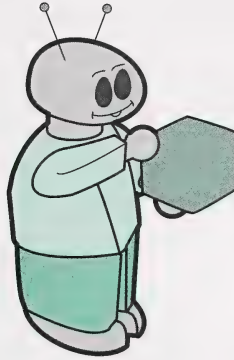
**Direction 3:** Move your hands over the **curved** surface of your ball.



**Direction 4:** Mould your dough into a **solid** with a **pointed** top.  
Then feel the **point** at the top.



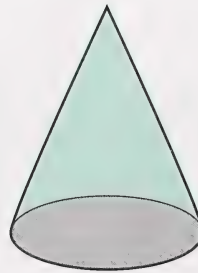
**Direction 5:** Mould your dough into a solid with eight **corners**, like a box.



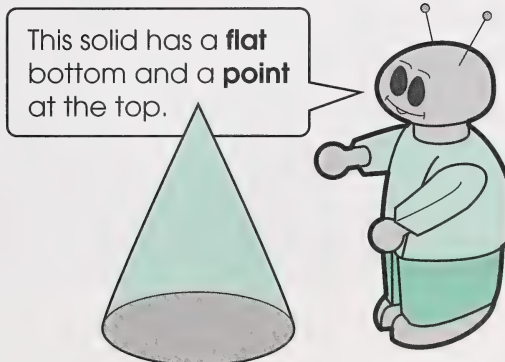
**Direction 6:** Touch the eight corners and the **edges** of your solid. Feel the **sides** of your solid. What **shape** are they? (The child could describe the shape as a square.)

## Applying the Concept

Place a **cone** in front of the student.

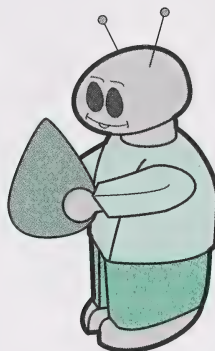


Ask your student to describe this solid.





If necessary, guide the child to describe in geometric terms such as **flat face**, flat bottom, curved surface, and point. Then have the student use dough to build a copy of the solid.



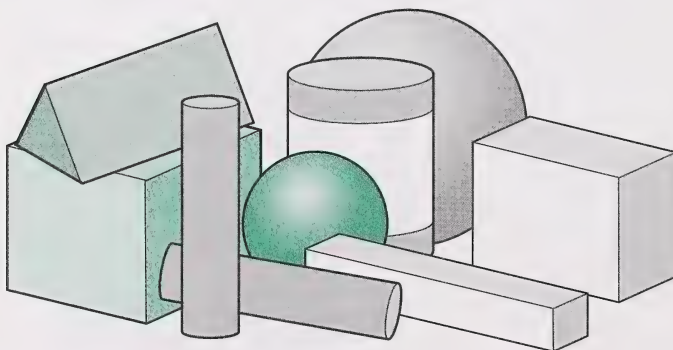
While the student is building, discuss the different geometric properties of the solid, such as curved surface, flat bottom, flat face, and point at the top.

Repeat a similar procedure for the remaining types of solids—cylinder, cube, **pyramid**, and prism.

### Enrichment (optional)

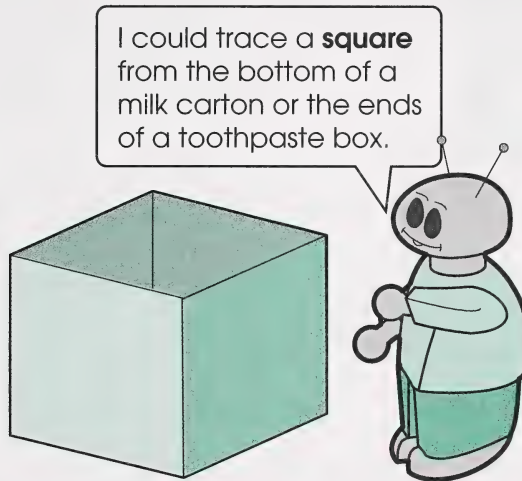
#### 1. What Solids Will Make the Shape?

**Step 1:** Place your collection of geometric solids in front of the student.

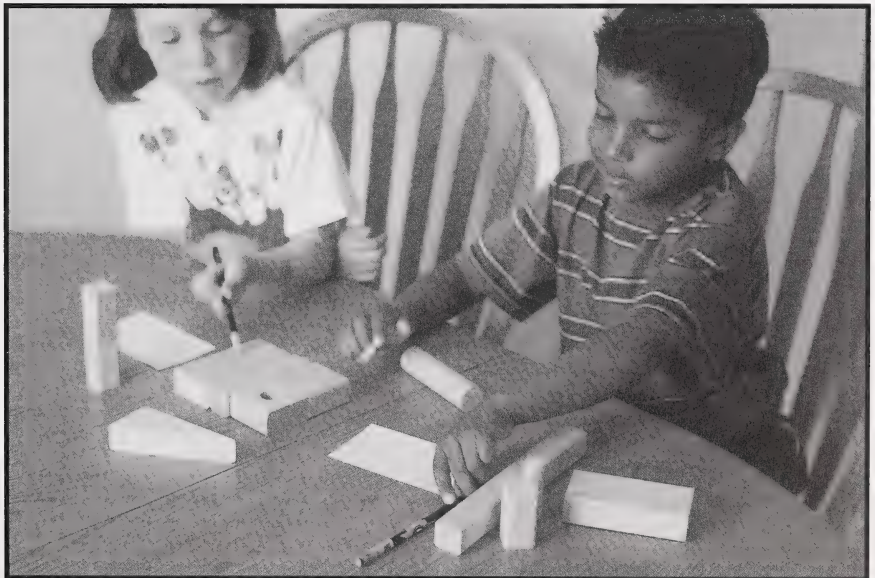


**Step 2:** Ask your student to suggest which geometric solids have edges that could be traced to draw a **square**.

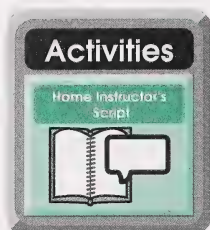
Encourage the child to make predictions.



**Step 3:** Have the student trace each suggested solid to draw its shape on a piece of paper or chalkboard.



**Step 4:** Ask the following questions about each solid that is traced.



Did this solid make a **square**?

Could you trace a different side of the same solid and make another square?

The bottom of the milk carton and the ends of the toothpaste box did make squares.



**Step 5:** Repeat the process using **rectangles**, **circles**, and **triangles**.

I could trace a circle from the can of soup.





## 2. Books About Geometric Solids and Shapes

The following are from the lists of Additional Resources at the beginning of this module. You could search them out at your local library in order to enhance your student's understanding of geometric solids and shapes. Additional information is given about some of the books.

*Shapes* by John J. Reiss

In this book, common shapes such as squares and circles are introduced and transformed into geometric solids.

*The Circle* Sarah Drew by P. and S. Barrett

*The Line* Sophie Drew by P. and S. Barrett

*The Square* Ben Drew by P. and S. Barrett

*Shapes and Things* by Tana Hoban

This book presents black-and-white pictures of real objects, representing both shapes and solids.

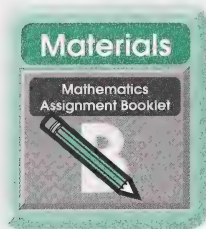
*Changes, Changes* by Pat Hutchins

Various objects are built from the same set of blocks.

*Regards to the Man in the Moon* by Ezra Jack Keats

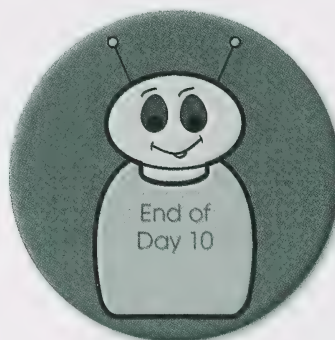
Children build a spacecraft from “junk” material.





Turn to Mathematics Assignment Booklet 5B, and follow the directions to do the assignment for Day 10.

Then complete Day 10: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning.



# Day 11



## Calendar Time

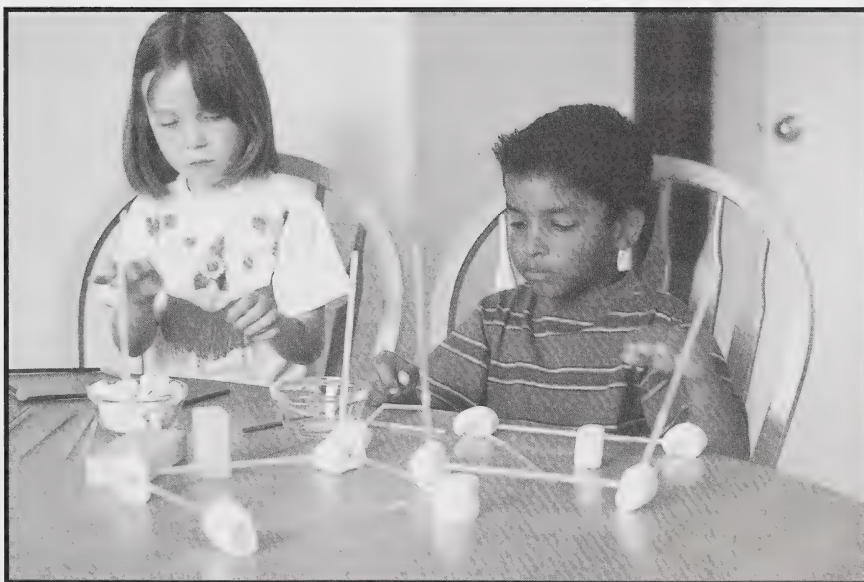
**Time recommended: 10 minutes**

Begin your lesson with the daily calendar activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- classifying and describing geometric solids and shapes according to various properties
- constructing a variety of geometric solids and shapes



## Vocabulary (spoken only)

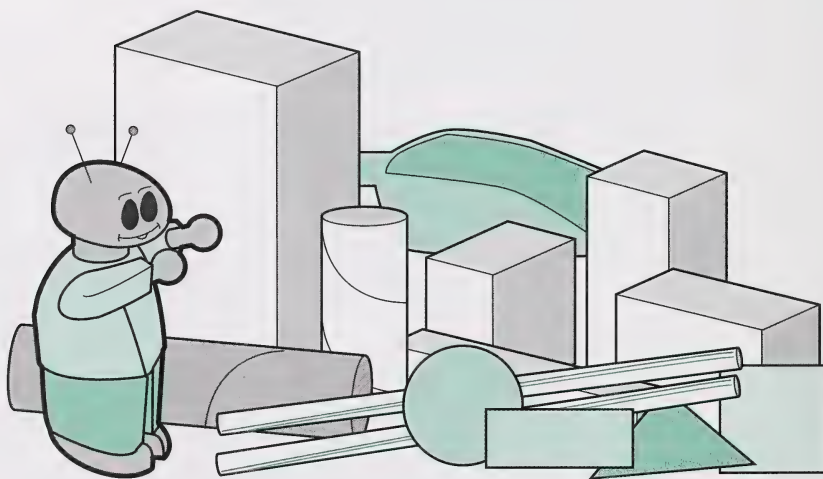
geometry  
solid/solids

shape/shapes  
face/faces



### Materials Required

- box of required materials from the master list
- assorted geometric solids, such as cans, boxes, ice cream cones, milk cartons, toilet-paper and paper-towel cores, and balls of various sizes, or a set of purchased geometric solids, such as wooden blocks
- various sizes of straws, craft sticks, or suitable substitutes
- pipe cleaners
- modelling dough or marshmallows
- cut-out paper geometric shapes (rectangles, squares, triangles, and circles) in various sizes



Continue to keep your geometric solids for future use. You could add to your collection if you find suitable items.

## Developing the Concept

Today, you will continue to develop your student's understanding of geometric solids and geometric shapes.

### Activities

Teaching Tip

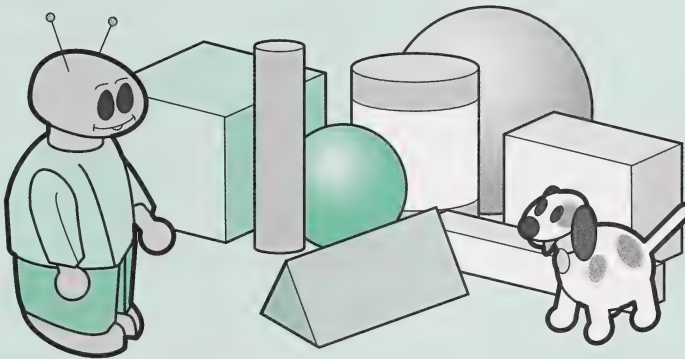


The study of **geometry** is another opportunity for your student to connect mathematics to the environment.

As a student's knowledge of geometry develops, the child will learn to do the following:

- recognize different **solids** and **shapes**
- name and describe the solids and shapes
- express relationships, both within and between shapes and solids

The study of geometry is also about developing spatial sense—the ability to picture objects mentally and maintain accurate perceptions of the objects in different circumstances.

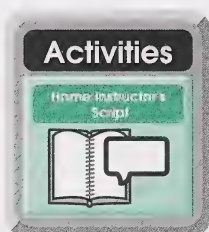


### Making Geometric Solids

**Step 1:** Give your student time to freely explore and talk about the collection of geometric solids, to discover properties about each solid.



Discuss the properties with questions, such as the following.



Does this **solid** have a curved surface or a flat surface?

Are there **sides** of this solid that have rectangular **faces** or circular **faces**?

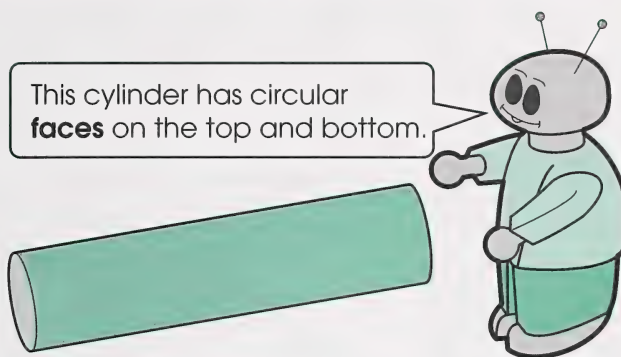
Explain that a face is one of the flat sides of a solid object.

How many **edges** does this **solid** have?

How many **sides** does this rectangular **solid** have?

Will this **solid** roll?



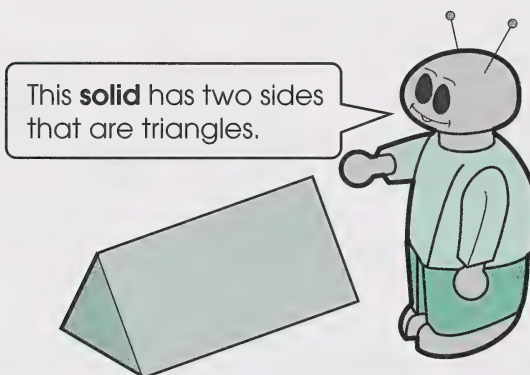


**Step 2:** Ask your student to look at the solids and choose one to build.

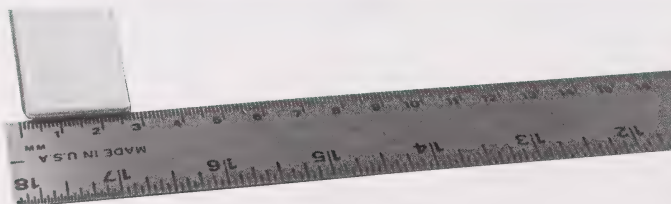
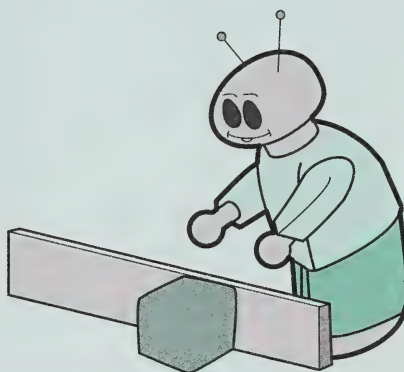


Offer a selection of building materials, such as straws, craft sticks, pipe cleaners, modelling dough, and marshmallows. Challenge your student to select materials to create a model that is about the same size as the original.

**Step 3:** Take turns creating models and talking about their properties until each kind of solid (cylinder, sphere, cone, cube, and pyramid) and shape (rectangle, square, circle, and triangle) has been represented.



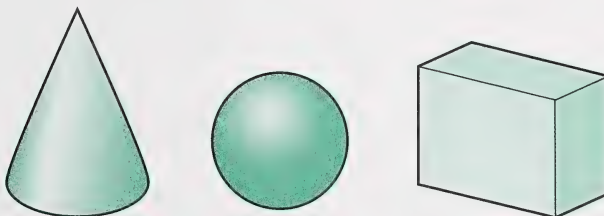
Observe how your student creates flat faces, corners, and curved surfaces. Provide a ruler, and show the student how to use it to judge how straight edges are.



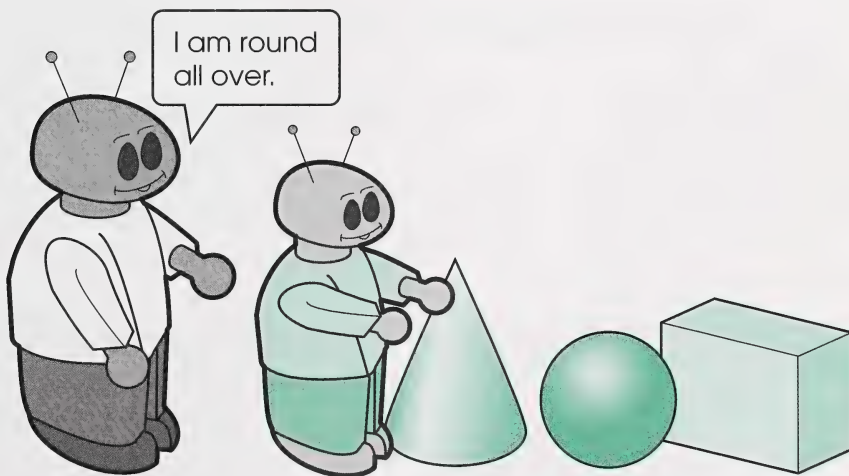
## Applying the Concept

### Who Am I?

**Step 1:** Give the student three geometric solids, such as a ball, a cone, and a box.



**Step 2:** Describe one of the solids. For example, you could say, “I am round all over.”

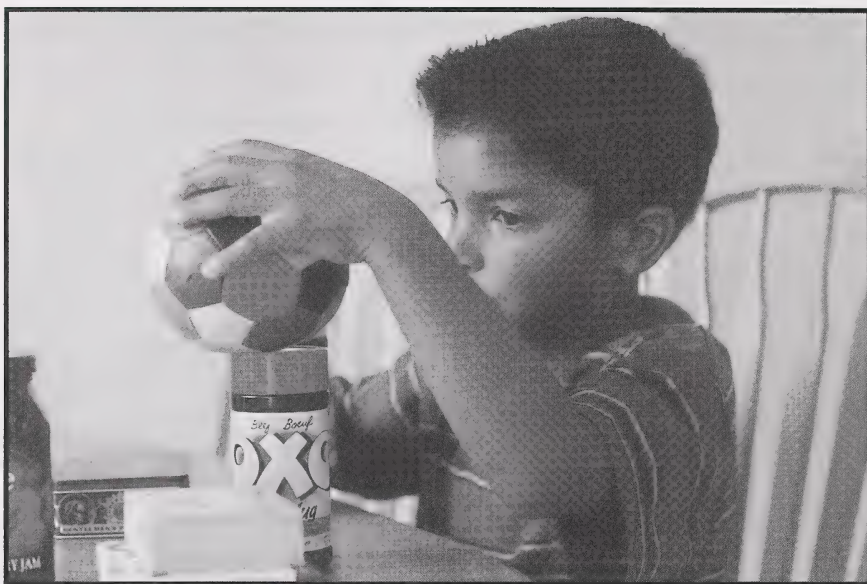


**Step 3:** The student may use a common name (ball) or a geometric name (sphere) to identify the solid. If the student experiences difficulty, provide another clue, and have the child guess again. For example, you could add, “I can roll.”

**Step 4:** Continue with at least one clue for each solid.

**Step 5:** Repeat Steps 1 to 4 with geometric shapes, such as one triangle, one circle, and one rectangle.



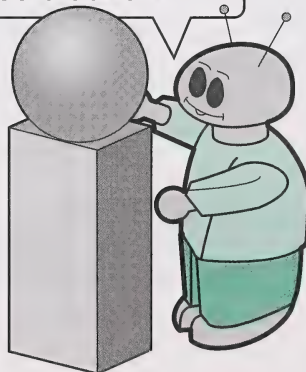


## Enrichment (optional)

### 1. A Solid of My Own Invention

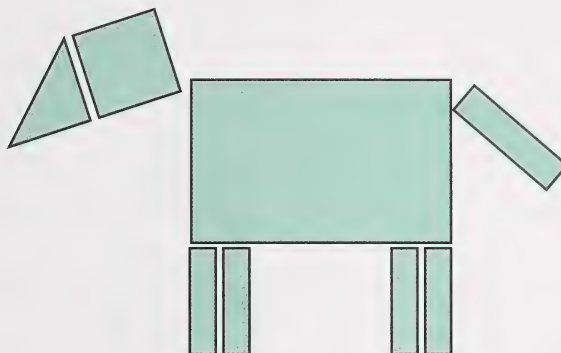
Challenge your student to invent a solid, give the invention a name, and describe it with geometric terms such as *curved surface*, *flat surface*, *rectangles*, *triangles*, *circles*, and *corners*.

This invention makes bubble gum. It has a curved top and flat, rectangular sides and a square bottom.



## 2. My Recipe for Something from the “Real World”

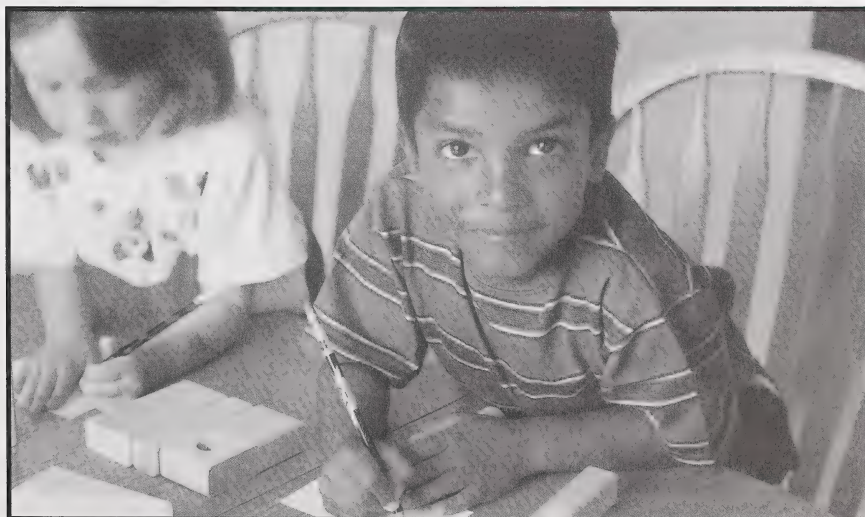
**Step 1:** Ask the student to arrange geometric solids or paper shapes to show a “real-world” object. For example, the child might make a three-dimensional house or a paper-shape horse.



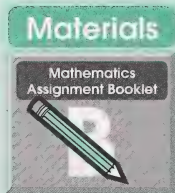
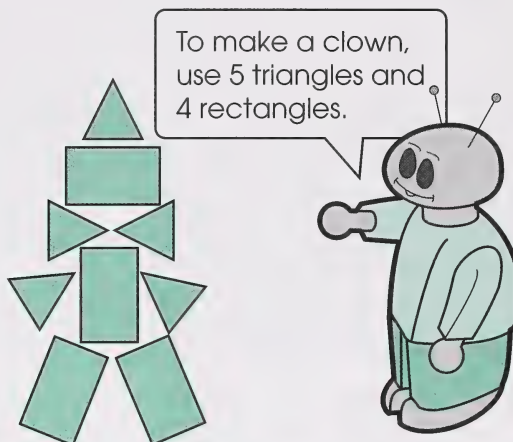
**Step 2:** Your student can then use a blank index card to write a “recipe” for the chosen item. Examples follow.

To make a horse, use 6 rectangles, 1 triangle, and 1 square.

To make a house, use 1 pyramid on top of 1 cube.



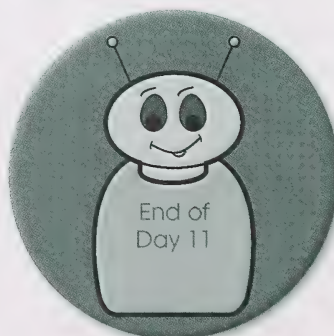
**Step 3:** Take turns writing “recipes” that use each of the solids (cylinder, sphere, cone, cube, rectangular prism, and pyramid) and shapes (rectangle, square, circle, and triangle). Help as necessary. Use the glossary of the Home Instructor’s Manual to clarify any terms for yourself or the student.



Turn to Mathematics Assignment Booklet 5B, and follow the directions to do Day 11: Assignment 1.

Next, follow the directions to complete Day 11: Assignment 2.

Then complete Day 11: Learning Log. Under Student’s Thoughts, print a sentence or two telling what the student thinks about this day’s mathematics learning.





# Day 12

## Activities

### Calendar Time



## Calendar Time

**Time recommended: 10 minutes**

Begin your lesson with daily calendar activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- exploring, sorting, and describing geometric solids according to two properties or attributes

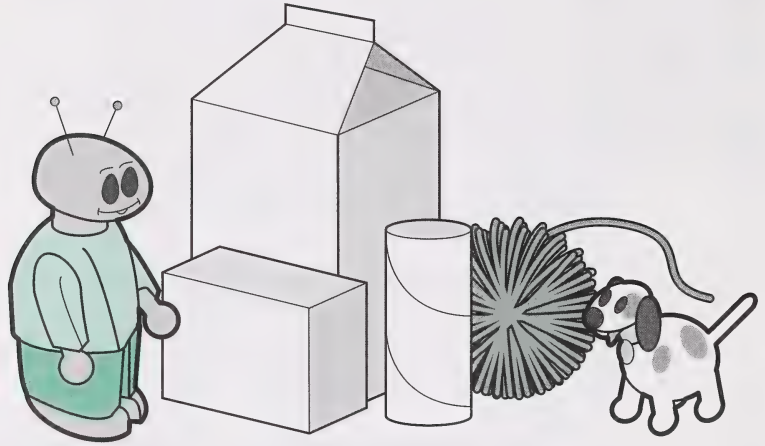


## Vocabulary (spoken only)

sorting rules  
roll  
slide  
stack

### Materials Required

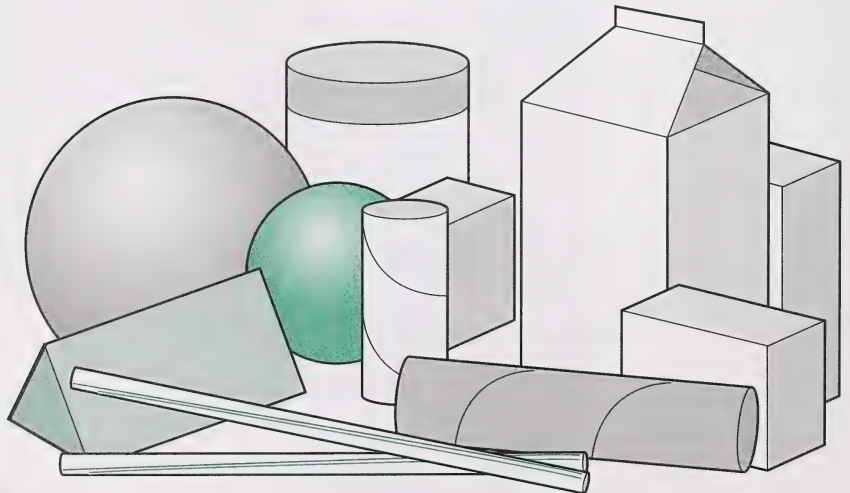
- box of required materials from the master list
- your collection of geometric solids
- yarn



Remember to keep and add to your collection of geometric solids.

### Developing the Concept

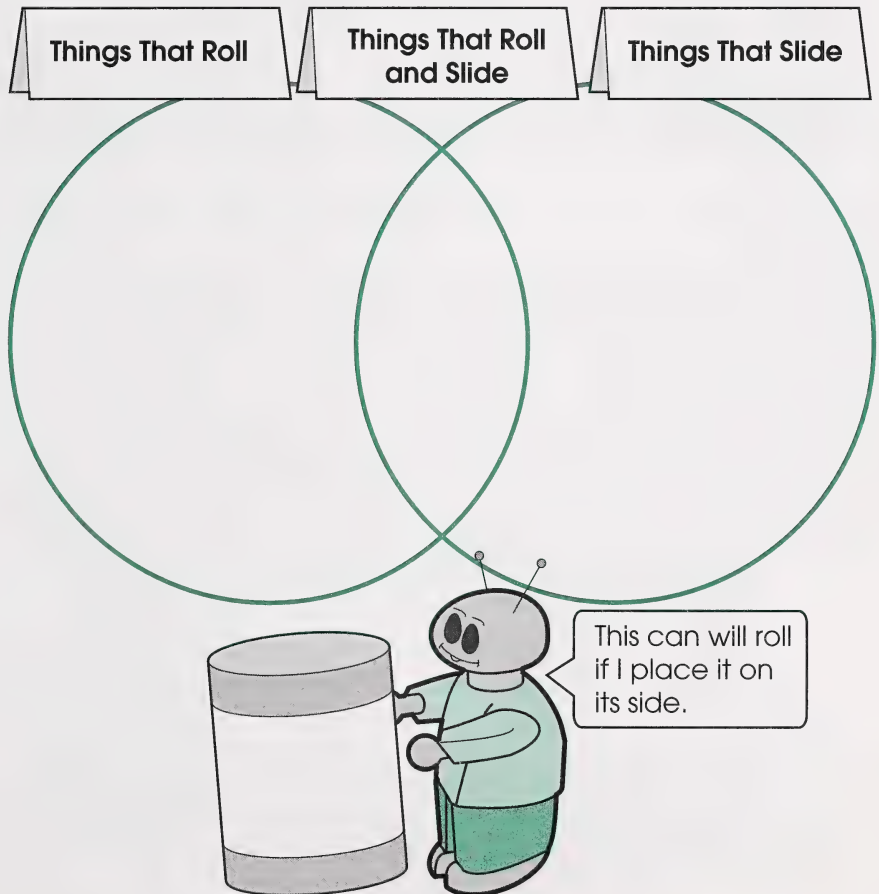
Provide a collection of solids for your student to sort according to two **sorting rules**—which ones will **roll** and which ones will **slide**.



The term **roll** applies to solids with a curved surface. Such objects can roll without any force being applied, for example, a ball. For the purpose of this lesson, the term **slide** applies to solids with flat faces that can be moved smoothly over a surface, the way a toboggan moves across the snow.

### Things That Roll and Things That Slide

Make two large, overlapping circles with yarn on the floor, similar to the circles shown below. Label one circle **Things That Roll**, the other circle **Things That Slide**, and the overlapping space **Things That Roll and Slide**.



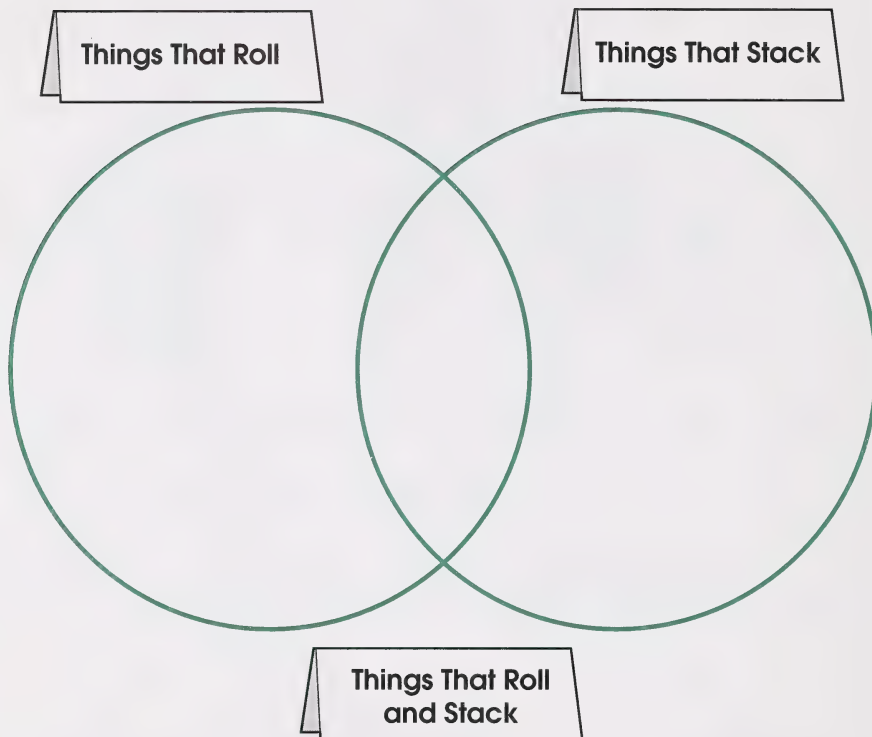
Monitor and discuss the student's sorting progress. The student could find that some objects will both roll and slide. For example, a can of soup will both roll and slide, depending on how you place it.



## Applying the Concept

### Things That Roll and Things That Stack

Change the labels on your circles and space. Then challenge your student to sort according to which objects can **roll** and which objects can **stack**.



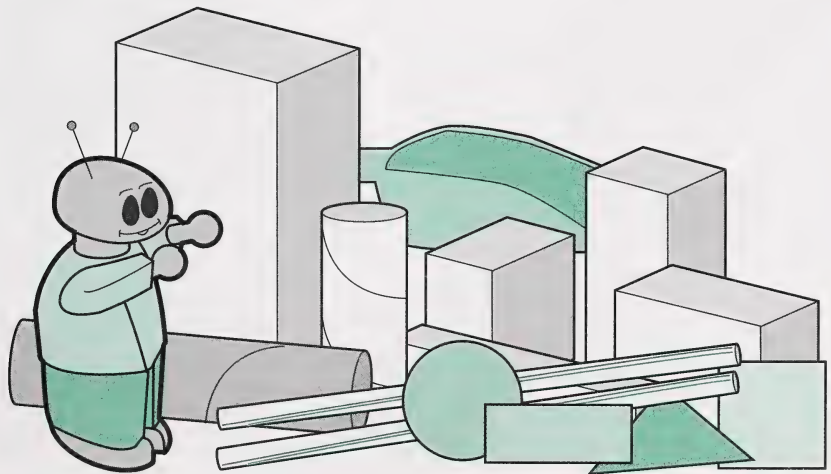
The term **stack** applies to solids with flat faces that can be stacked on top of one another. For example, your student has probably seen soup cans stacked one on top of the other.

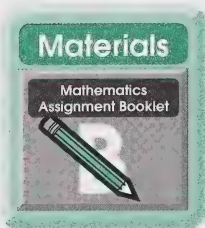
Monitor and discuss the student's sorting progress once again. While sorting, your student could find that some objects will both roll and stack. For example, a can of soup will both roll and stack, depending on how you place it.



### Enrichment (optional)

There are no Enrichment activities today. If you think your student needs extra help or a challenge, you could choose an activity from a previous day.

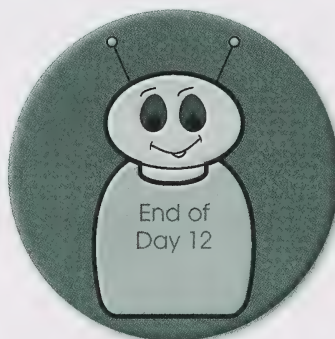




Turn to Mathematics Assignment Booklet 5B, and follow the directions to do Day 12: Assignment 1.

Next, follow the directions to complete Day 12: Assignment 2.

Then complete Day 12: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning.





# Day 13



## Calendar Time

**Time recommended: 10 minutes**

Begin your lesson with the daily calendar activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- discussing and describing similarities and differences between geometric solids
- sorting geometric solids according to a sorting rule





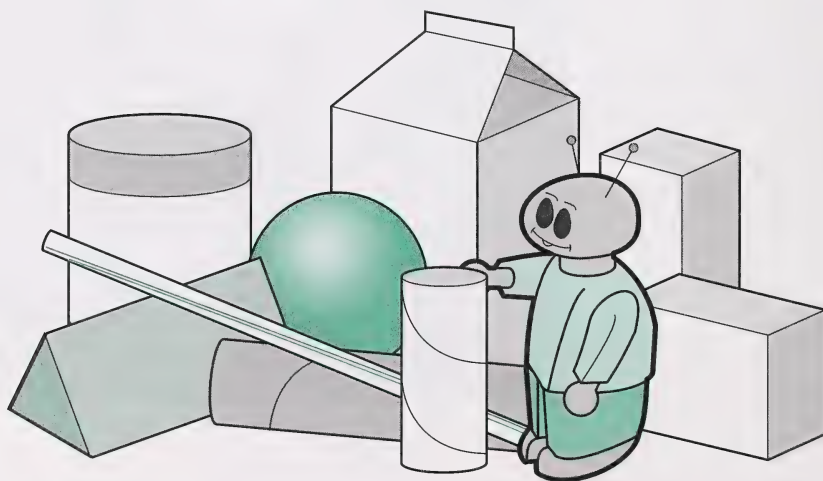
### Vocabulary (spoken only)

alike/different  
flat faces  
tall/taller/tallest  
big/bigger/biggest  
square faces

point  
short/shorter/shortest  
skinny  
small/smaller/smallest  
sorting rule

### Materials Required

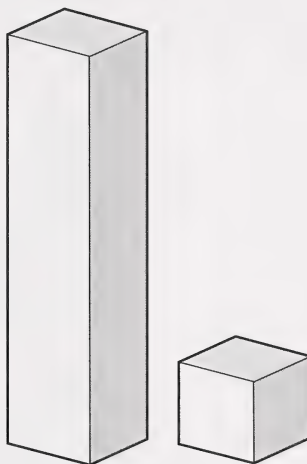
- box of required materials from the master list
- your collection of geometric solids



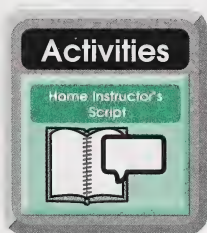
Keep and add to your collection of geometric solids. You will continue to use it in future days.

## Developing the Concept

From your collection of geometric solids, place two different solids in front of your student. The following illustration shows some examples.



Ask the student to tell how the two solids are **alike** and **different**. For example, your student could compare the two solids above as follows.



These two solids have **flat faces** all over.

One solid is **taller** than the other.

One solid has **bigger** sides.

Both solids have **square faces**.

Both solids have six faces.

Continue with this activity until your student has commented on the similarities and differences for at least ten pair combinations in your collection of geometric solids.

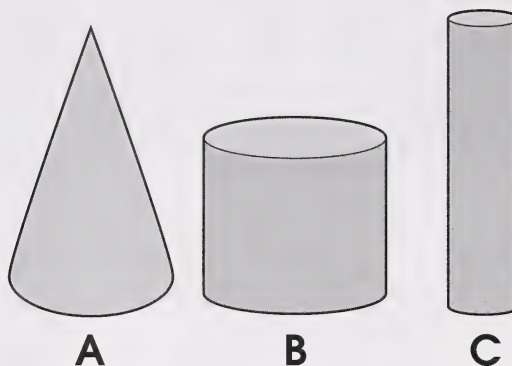




## Applying the Concept

### What Doesn't Belong?

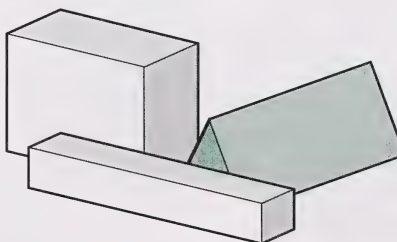
Place three solids in front of your student. Ask which solid does not belong with the other two. Some examples follow.



Since there are many ways to solve this problem, encourage lively discussion. For example, your student might say that A doesn't belong because it has a **point** or B doesn't belong because it's **short** or C doesn't belong because it's **skinny** and has a **smaller** bottom.

After the student has explored various properties of geometric solids, lead the discussion to focus on more distinct properties, such as the cone's point, rather than general properties, such as size.

Continue to have your student explain why one solid does not belong with two other solids until you have compared at least six combinations from your collection of geometric solids.

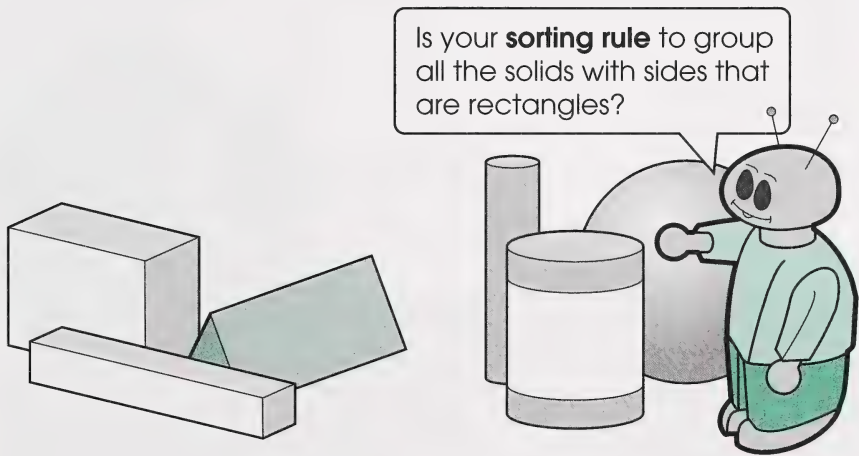


## Enrichment (optional)

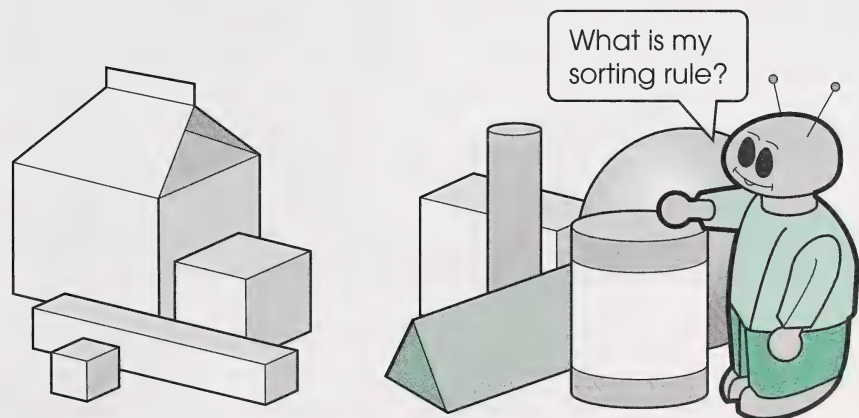
### What's My Sorting Rule?

For this activity, the student will need a collection of solids.

**Step 1:** Sort a group of solids by one specific property. Ask your student to look at the sorted groups and explain your rule.

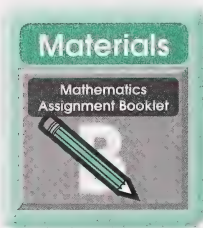


**Step 2:** Take turns sorting a group of solids by one specific property and determining the sorting rule.



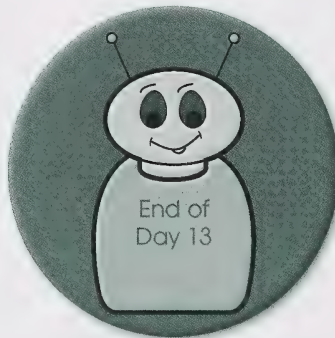
**Step 3:** Continue until your student is tired or loses interest.

## Day 13 • Mathematics



Turn to Mathematics Assignment Booklet 5B, and follow the directions to do the assignment for Day 13.

Then complete Day 13: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning.





# Day 14



## Calendar Time

**Time recommended: 10 minutes**

Begin your lesson with the daily calendar activities and a few additional ones.

## Focus for Today

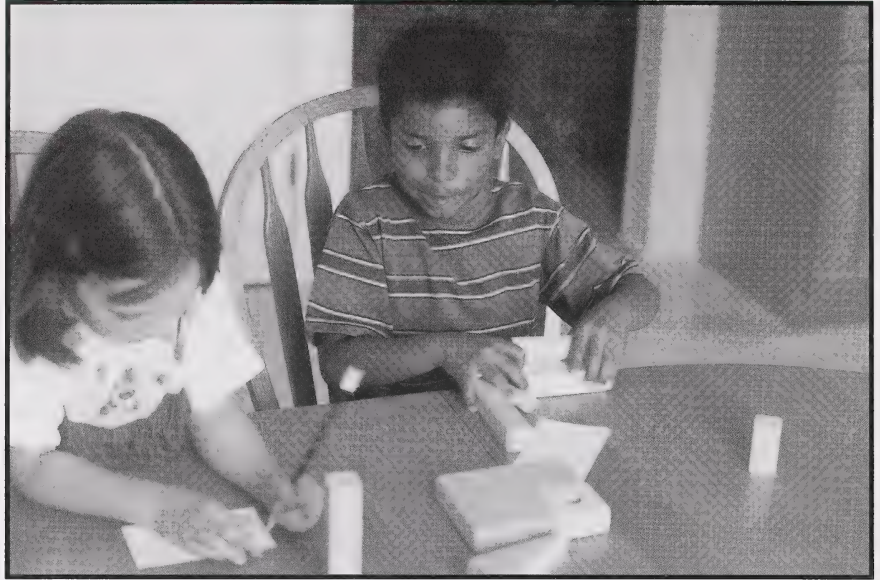
**Time recommended: 45 minutes**

- counting the number of flat faces on solids of various shapes



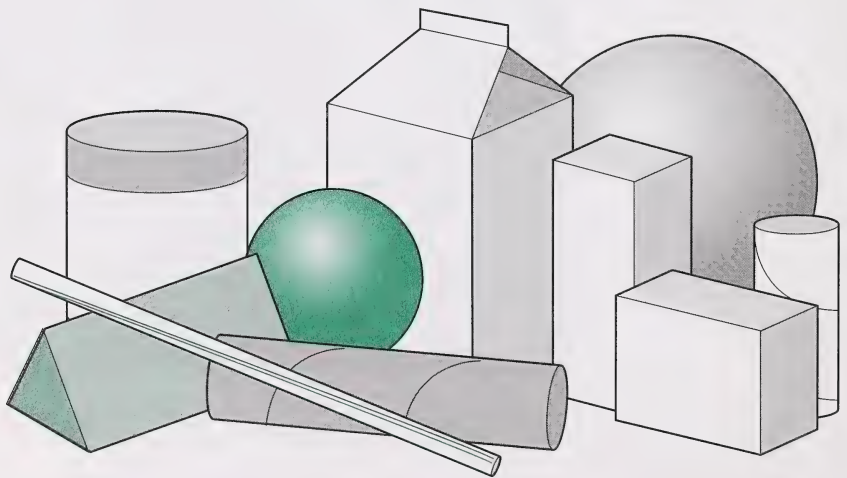
## Vocabulary (spoken only)

flat face  
flat faces



## Materials Required

- box of required materials from the master list
- your collection of geometric solids
- yarn or string

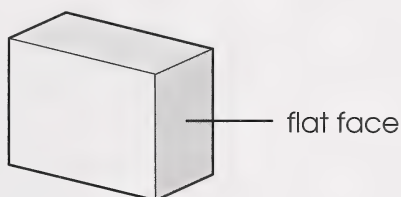


## Developing the Concept

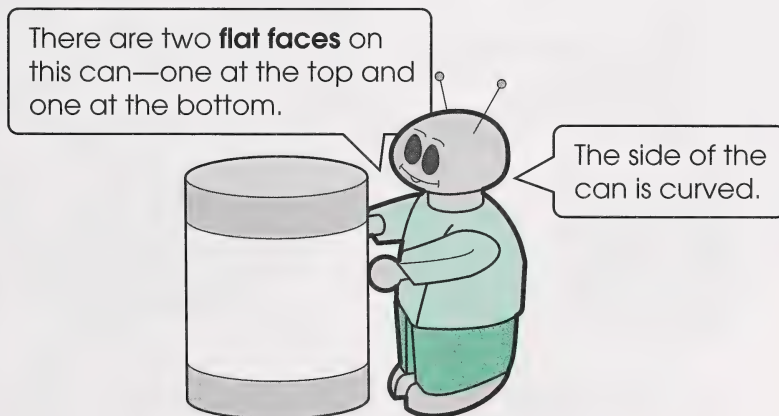
### How Many Flat Faces Have I?

Place a collection of geometric solids in front of your student. Ask whether the student remembers what a **flat face** is.

If the child is unsure, explain that a flat face is a smooth, even side or end of a solid object. A curved surface, such as a ball, does not have a flat face.



Show your student a few flat faces on objects, and have the child point out some flat faces to you.

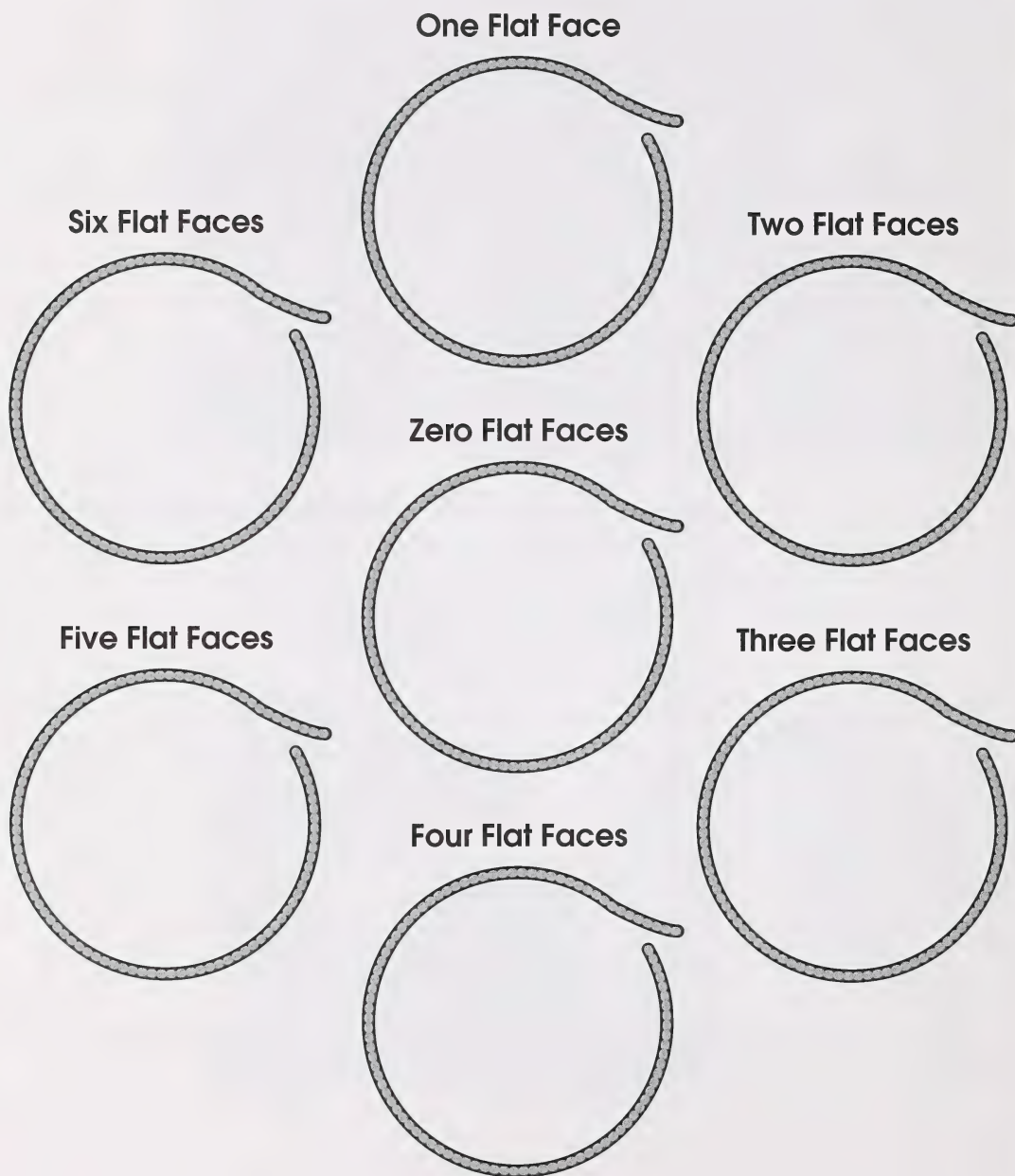


Then have the student count the numbers of flat faces on various kinds of solids.



## Day 14 • Mathematics

Make seven large circles with yarn or string on the floor, and label them as follows.



Have the student place solids into the appropriate circles. Numbers in each circle will depend on your collection.

It is important that your student be allowed to discover knowledge about solids through exploration and discussion. Examples of solids with one to six flat faces follow under the heading Applying the Concept. Your student may not find any solids with four flat faces, because they are not common.

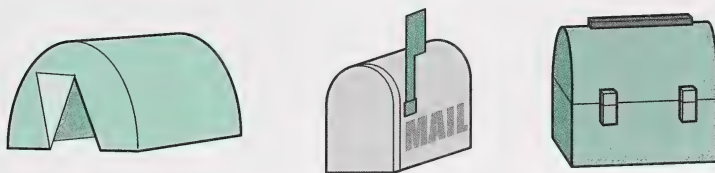
Monitor the student's progress. Discuss and correct any errors.

## Applying the Concept

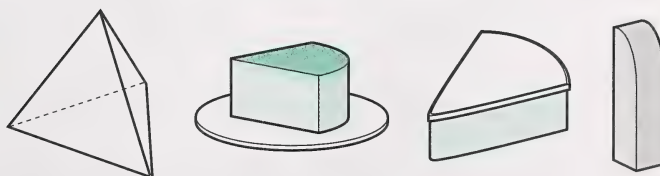
### A Face Hunt

Help your student locate household objects or look outside for larger objects with zero to six flat faces. Challenge the student to search for different objects than the ones you used in Developing the Concept. Examples of solids that you might find are the following:

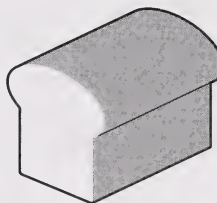
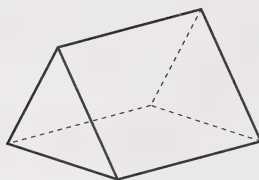
- zero flat faces—globe, orange, round rocks
- one flat face—dome-shaped paperweight, bowl with a lid, dinner buns
- two flat faces—hockey puck, film cannister, oil barrel
- three flat faces—pup tent, mail box, lunch kit, Quonset hut



- four flat faces—wedge of cheesecake, plastic pie-wedge container, some wooden blocks



- five flat faces—specialty chocolate-bar box, loaf of bread, some metronomes



- six flat faces—boxes, books, some furniture



Make a chart similar to the one shown below. Record the names of the solids you find and the number of faces on each.

Face Hunt Chart	
Name of the Solid	Number of Faces
log	2
cherry chocolate	1
dresser	6
egg timer	2
slice of bread	5



### Materials

Student Folder

123

Allow about 20 minutes to list items and numbers of faces. Then have the student print first and last names and the abbreviated form of the module and day numbers, M5D14, on the back of the page. Place the chart in the Student Folder.

## Enrichment (optional)

### 1. Neighbourhood Face Walk

Invite your student on a neighbourhood walk, and look for objects with different numbers of faces. When you get back to your learning area, list some of the objects and record how many faces you saw on each one.



### 2. The Book Connection

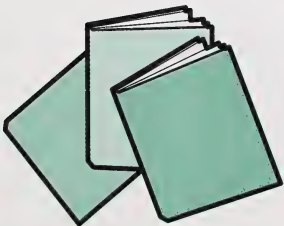
You could check for these books at your local library. They would enhance your student's learning about shapes.

*Spence Makes a Circle* by Albert Whitman

*The Shape of Me and Other Stuff* by Dr. Seuss

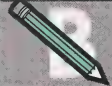
*Look Around: A Book about Shapes* by Leonard Everett Fisher

*Architect of the Moon* by Tim Wynne-Jones

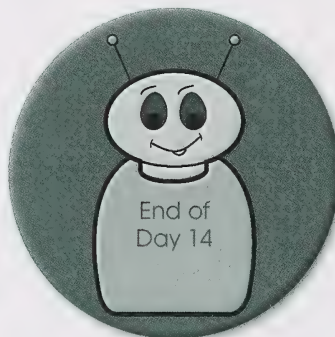


### Materials

Mathematics  
Assignment Booklet



Turn to Mathematics Assignment Booklet 5B, and follow the directions to do the assignment for Day 14.



# Day 15



## Calendar Time

**Time recommended: 10 minutes**

Begin your lesson with the daily calendar activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- finding objects in the environment that are similar to given solids



## Vocabulary (spoken only)

same  
match/matches



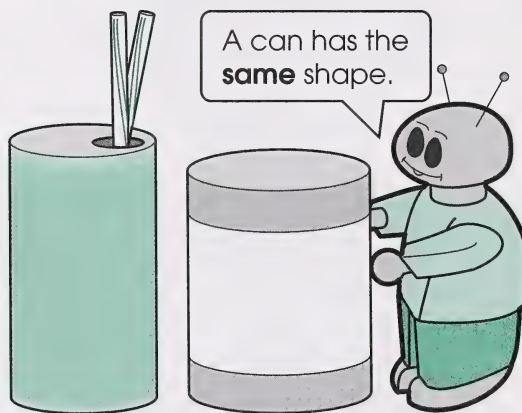
### Materials Required

- box of required materials from the master list
- your collection of geometric solids

### Developing the Concept

#### Can You Find an Object like Me?

Choose one object from your collection of geometric solids to show to your student. Ask the student to find other common objects that have the **same** shape and explain how the objects are alike.



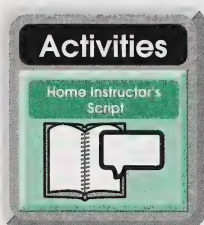
Take turns finding common items that **match** a given solid until the student has had practice finding a variety of **matches**. You could extend this activity outside as well.





## Applying the Concept

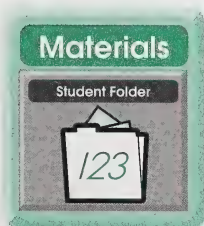
Help your student print the title **What I Found Out!** at the top of a loose-leaf paper. Then help print responses to questions about the previous activity. Answers will depend on what you found. You could use questions similar to the following. Have the student answer in complete sentences.



Which type of solid did we find most often?

Which type of solid did we find least often?

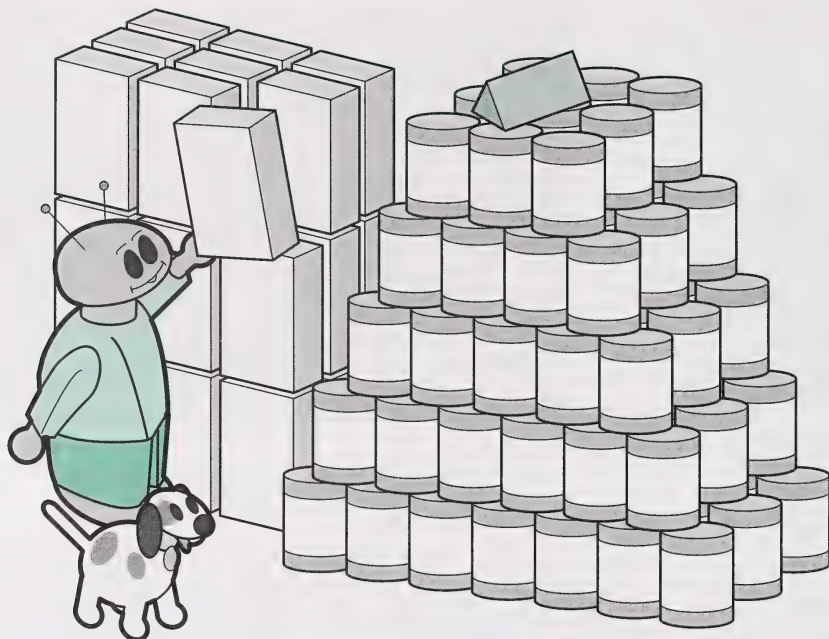
Why do you think there are more \_\_\_\_\_ than \_\_\_\_\_? (For example, the student may have found more cylinders because you were looking in the kitchen where there are a lot of canned goods.)



After answering the questions, have the student print first and last names and the abbreviated form of the module and day numbers, M5D15, on the back of the answer page. Then place this page in the Student Folder.

## Enrichment (optional)

If you think your student needs extra help or a challenge today, you could choose an Enrichment activity from a previous day.



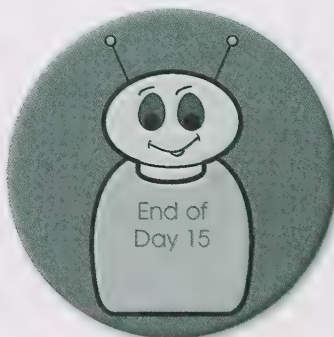
## Materials

Mathematics  
Assignment Booklet



Turn to Mathematics Assignment Booklet 5B, and follow the directions to do the assignment for Day 15.

Then complete Day 15: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning. What activity did the student enjoy doing the most, and why? What activity did the student find difficult, and why?



End of  
Day 15



# Day 16



## Calendar Time

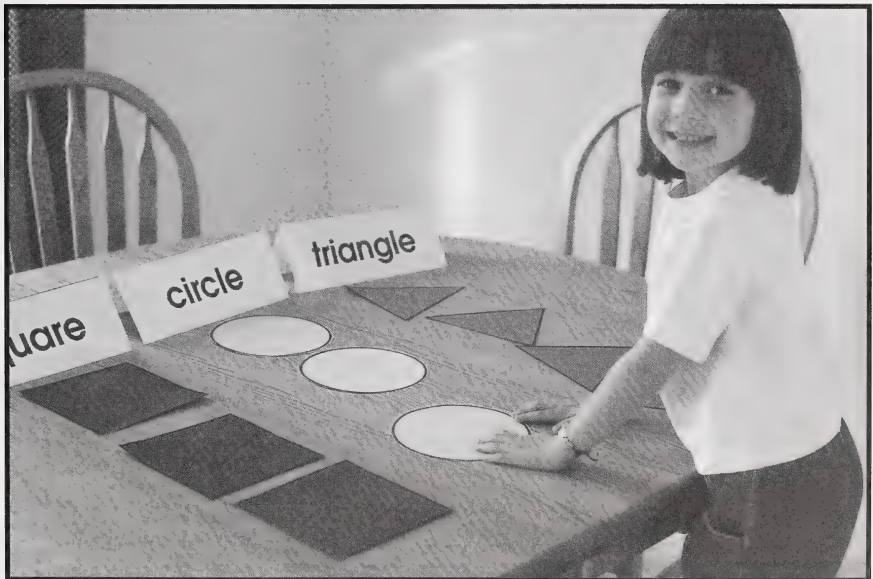
**Time recommended: 10 minutes**

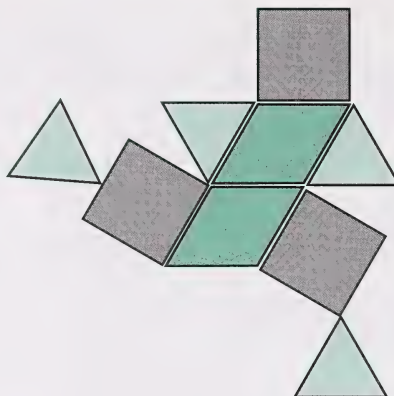
Begin your lesson with the daily calendar activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- identifying, naming, and describing specific two-dimensional shapes, such as circles, triangles, and rectangles
- comparing, sorting, and classifying two-dimensional shapes





### Vocabulary (spoken only)

triangle

circle

rectangle

square

shape

straight

geometric name

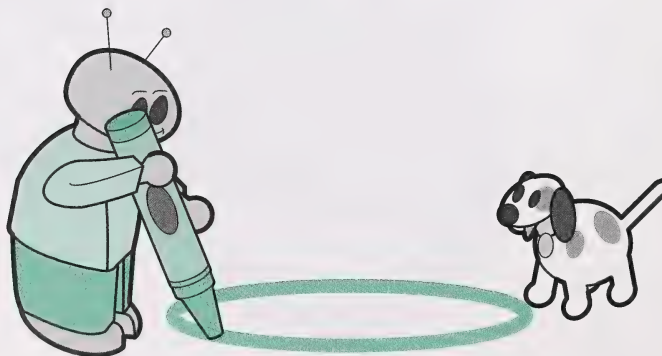
curved

opposite

other

### Materials Required

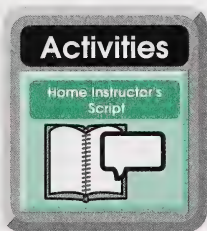
- box of required materials from the master list
- computer with word-processing/drawing software and a printer (optional)
- collection of shapes cut from various colours of construction paper (optional)
- collection of small geometric solids (optional)



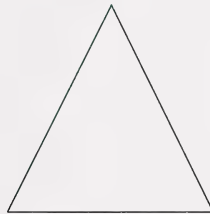
## Developing the Concept

On four sheets of paper or different pages in a computer program, help your student print the words **triangle**, **circle**, **rectangle**, and **square**. You will need access to a printer if you choose to use a computer for this activity.

Begin with the triangle page, and review what a triangle is.

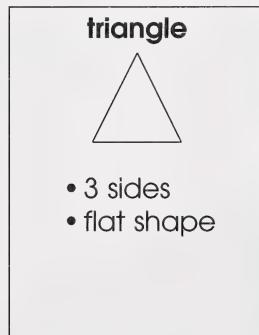


A **triangle** is a flat **shape** with three **straight** sides.



Ask your student to draw a triangle below its **geometric name**. If drawing on paper, encourage the student to use a ruler to make the sides of the triangle straight. If using a computer, guide the student in using the drawing program.

Ask what your student knows about this shape. Help the child record the responses.

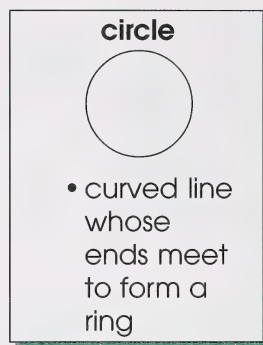
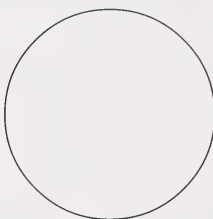




Next, have your student do the circle page.

Review what a circle is. Have the student draw or trace the shape below its geometric name and then describe it. Help record responses.

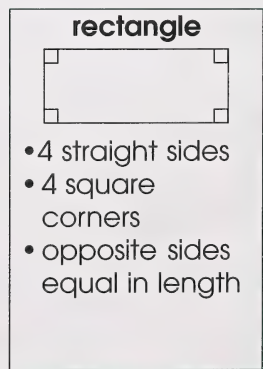
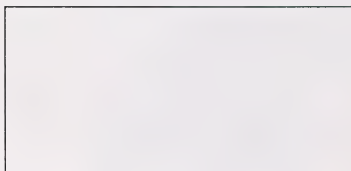
A **circle** is a **curved** line whose ends meet to form a ring.



Then have your student do the rectangle page.

Review what a rectangle is. Have the student draw the shape below its geometric name, using a ruler if necessary to make the sides straight. Then have the student describe the rectangle. Continue to help record responses.

A **rectangle** is a shape that has four **straight** sides, four square corners, and **opposite** sides that are equal in length.



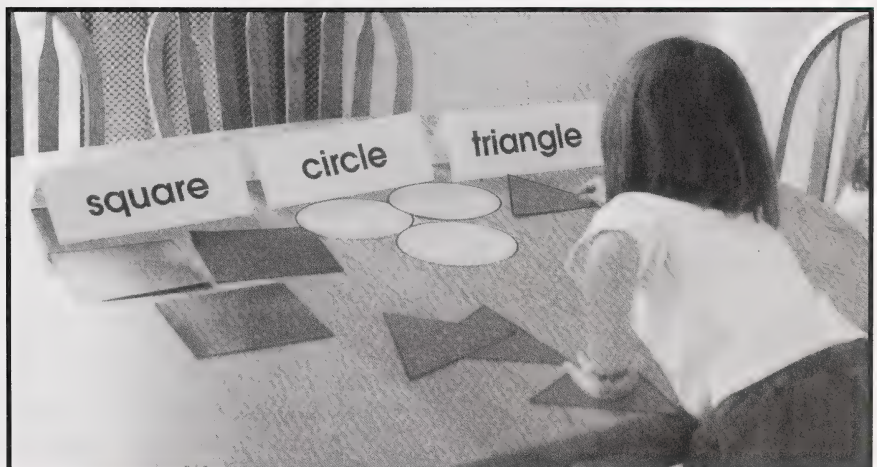
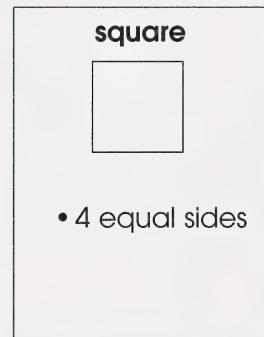
Explain that the student can draw a small square at each corner of a rectangle to show that the two sides of the corner can be part of a square shape.



Last, ask your student to tell what a square is.

Review what a square is. Have the child draw the shape below its geometric name, using a ruler to make the sides straight. Then have the student describe the square. Help as necessary.

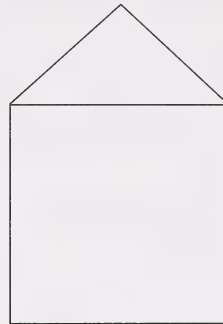
A **square** is a rectangle that has four equal sides.



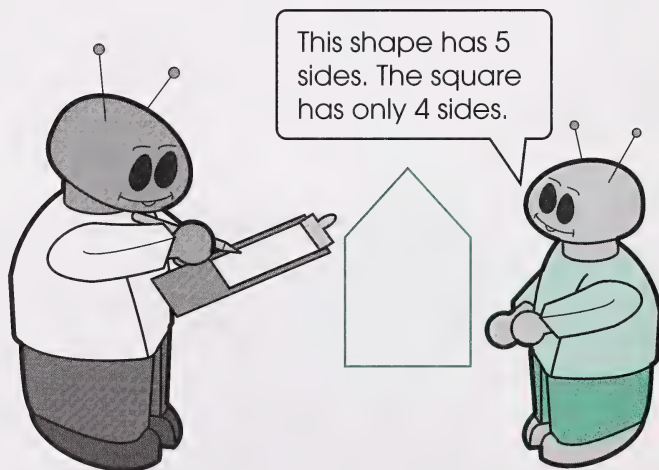
## Applying the Concept

### My Shape Book

Ask your student to use a new page to draw one more shape that is different from the four that have been studied so far. For example, your student could draw a shape similar to the one shown below.



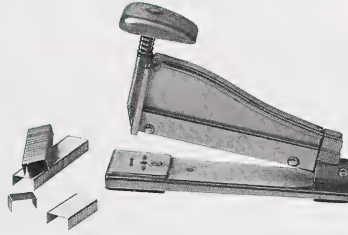
On the same page, record the child's observations about this new shape.



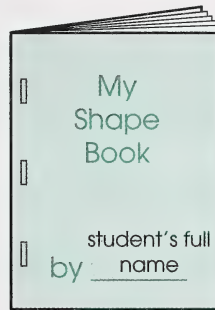
Talk about the similarities and differences between the new shape and the previous four shapes.

If your student has used a computer for this activity, print off the five pages created. If the student has drawn on paper, gather up the five pages now.

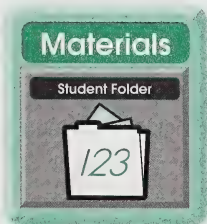




Place the five shape pages between front and back cover pages.  
Staple the booklet together on the left side.



On the front cover, have the child print the title **My Shape Book** and the word **by** followed by the student's full name. Ask the child to print the abbreviated form of the module and day numbers, M5D16, on the back cover.



Encourage your student to read **My Shape Book** to at least three other people and talk about the similarities and differences between the shapes. Then place this booklet in the Student Folder.

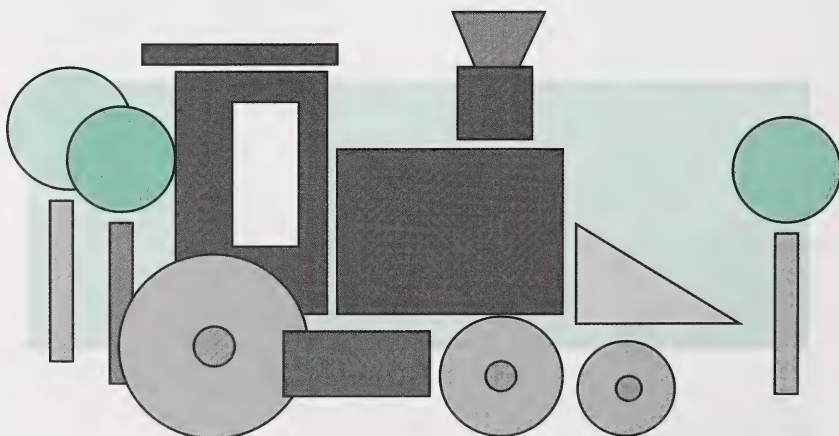


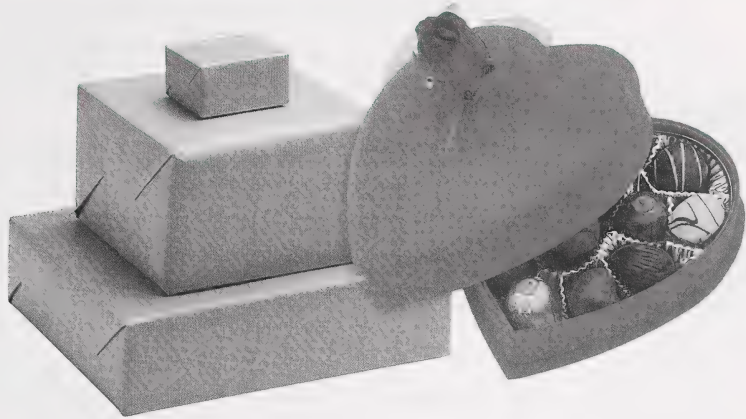
## Enrichment (optional)

### 1. Shape Picture

For this activity, your student will need the collection of shapes (circles, triangles, rectangles, and squares) cut from various colours of construction paper.

Place all the shapes in a box, and challenge your student to use them to make shape pictures, such as the one shown below. The student could glue the shapes onto unlined paper to make permanent pictures.

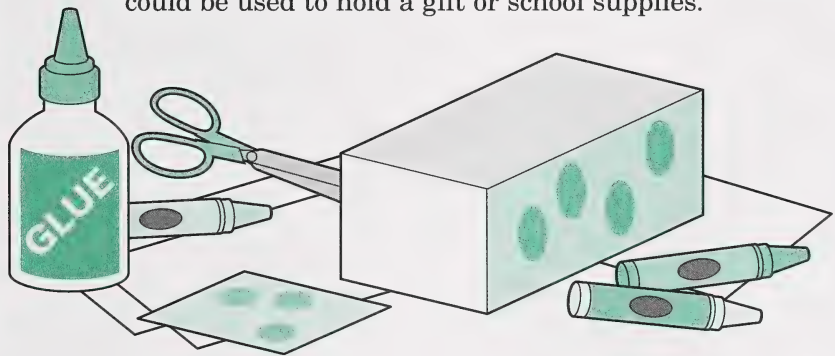




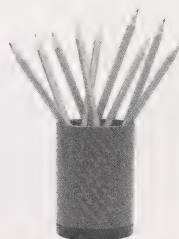
## 2. Decorating a Box

**Step 1:** Ask your student to trace each side of a small box onto plain paper and cut out the tracings.

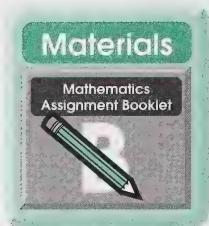
**Step 2:** Have the student decorate each tracing, fit it back to the side of the box, and then glue it on. The completed box could be used to hold a gift or school supplies.



**Step 3:** Challenge your student to trace curve-shaped solids as well. For example, a tin can with the top safely removed could be covered as a pencil container.



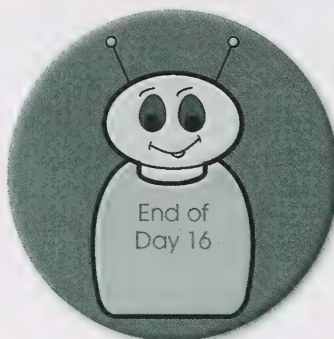




Turn to Mathematics Assignment Booklet 5B, and follow the directions to do Day 16: Assignment 1.

Next, follow the directions to complete Day 16: Assignment 2.

Then complete Day 16: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning. What activity did the student enjoy most, and why? What activity did your student find difficult, and why?



# Day 17



## Calendar Time

**Time recommended: 10 minutes**

Begin your lesson with the daily calendar activities as usual.

## Focus for Today

**Time recommended: 45 minutes**

- describing the relative positions of objects



## Vocabulary (spoken only)

straight  
horizontal line  
above/below  
vertical line  
down/up

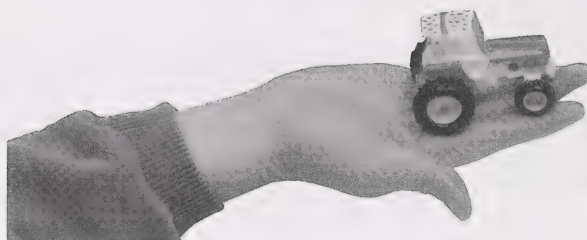
across  
left  
right  
near/far  
over

under  
behind  
in front  
around  
between

top  
bottom  
on  
first  
beside

### Materials Required

- box of required materials from the master list
- chosen items, such as toys or stuffed animals



### Developing the Concept

#### Activities

##### Teaching Tip



In order to develop spatial sense, it is important to give your student many opportunities to place items according to directions, such as, "Place the ball in your left hand."

Use masking tape on a table or the floor to make a long, **straight, horizontal line** similar to the one that follows.



Ask your student to choose some favourite items, such as toys. Have the student place the items according to the following directions.

#### Activities

##### Home Instructor's Script



Point to the **horizontal line**.

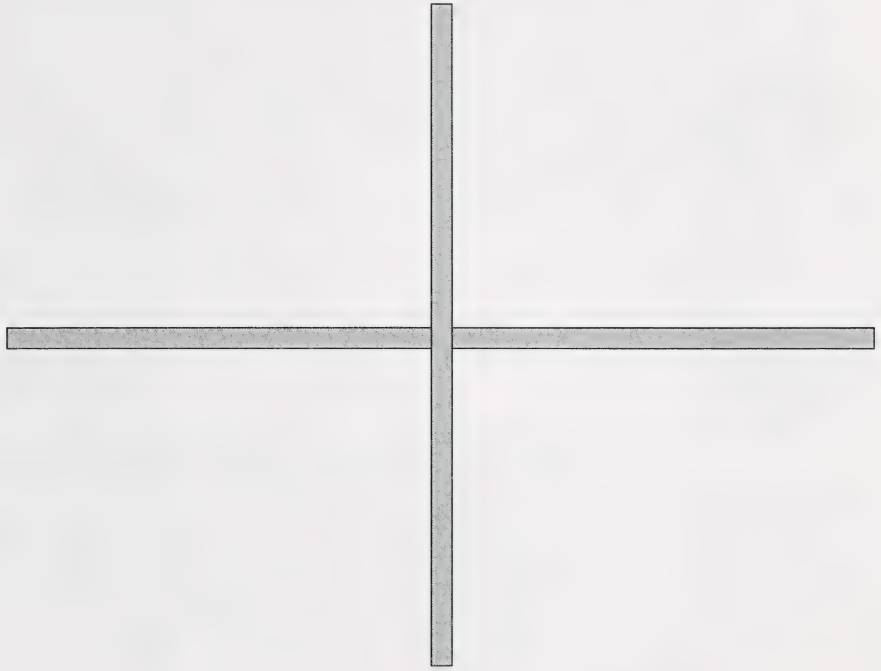
Place one toy **above** the **horizontal line**.

Place another toy **below** the **horizontal line**.

Help your student as necessary. If the child experiences difficulty with the words **above** and **below**, spend some time practising these words using a variety of toys.



Next, use masking tape to make a **vertical line** that crosses the horizontal line in the middle, and continue with the directions.



Move your hand slowly **down** the **vertical line**.

Move your hand slowly **across** the **horizontal line**.

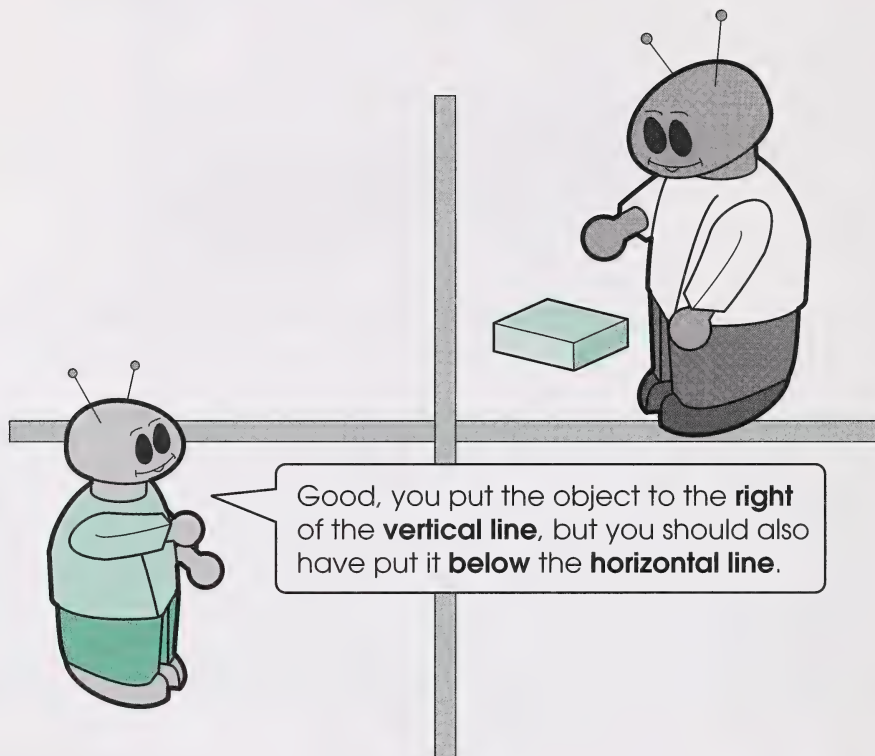
Place one toy **above** the **horizontal line** and to the **left** of the **vertical line**.

Now, place it **below** the **horizontal line** and to the **right** of the **vertical line**.

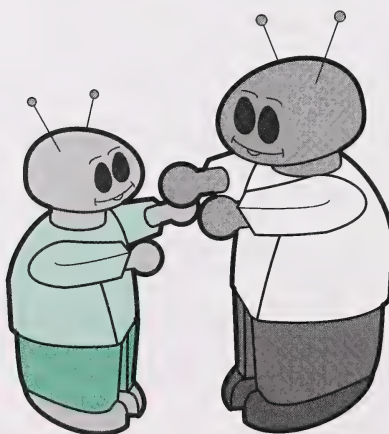
Place another toy **below** the **horizontal line** and to the **left** of the **vertical line**.

Monitor the child's positioning of the toys. Discuss and correct any errors.

Take turns asking each other to position items. Check each other's placements for correctness. Occasionally, make a mistake so that the student can identify and discuss the errors.



Next, discuss the positional words **near** and **far**. Begin by standing near your student and saying, "I am near you."



Then ask the student to stay in the same spot while you move across the room. Say, “I am far from you.”

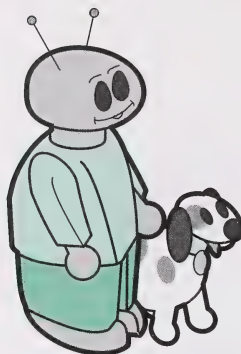


Take turns placing yourselves or objects in near or far positions and then questioning each other. For example, “Am I near you or far from you?” or “Is the teddy bear near you or far from you?”





Next, show the following illustration to your student. Discuss whether C-Spot is near or far away from Mascot.

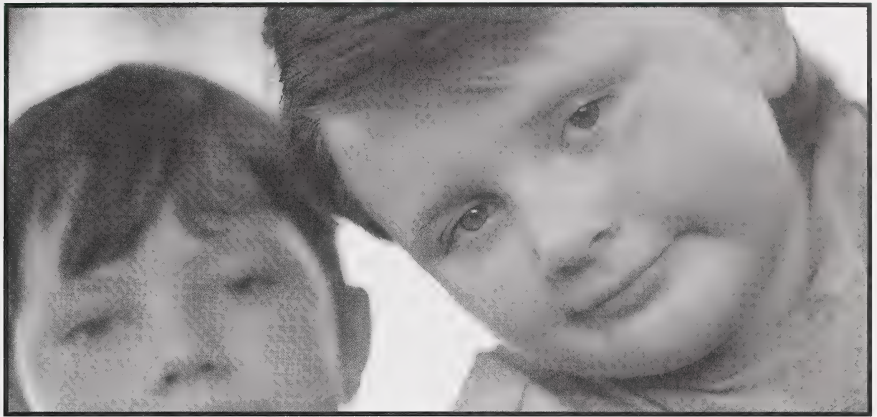


If your student does not indicate that C-Spot is near Mascot, give more practice positioning objects near and far from each other. Then focus your student's attention on the following picture. Again, ask whether C-Spot is near or far from Mascot.



If your student does not indicate that the dog is far from the child, give still more practice positioning objects near and far from each other. Use concrete objects such as toys to review your student's understanding of the words *near* and *far*.

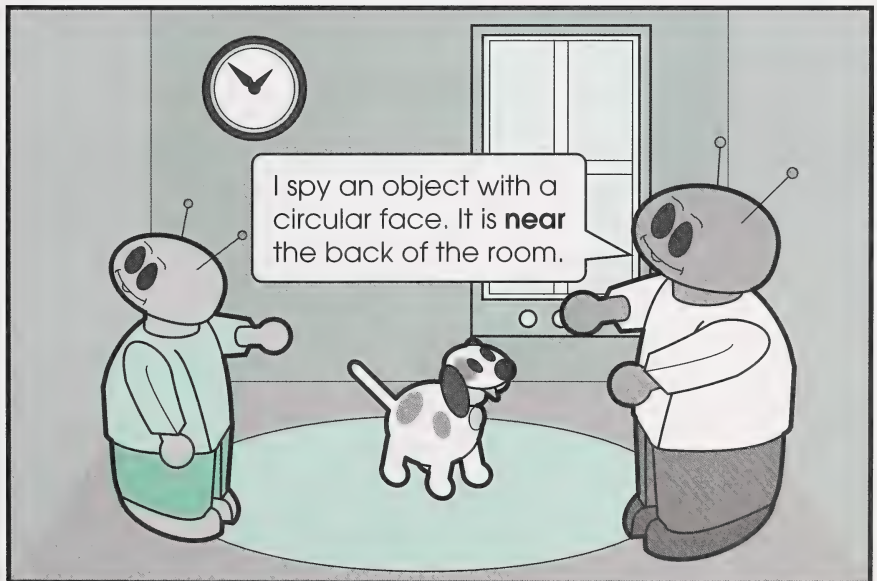




## Applying the Concept

### I Spy Game

Take turns describing the relative positions of geometric solids and shapes in the room. For example, “I spy an object with a circular face. It is **near** the back of the room. What is it?”



Continue until the student has practised various positional words or until signs of fatigue appear.

## Enrichment (optional)

### 1. Positional Word Hunt

Make a list of all the positional words that you and your student can think of.

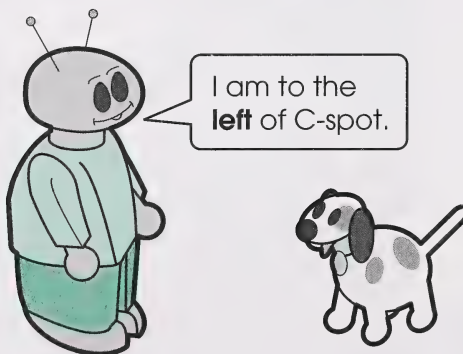
Ask the student to demonstrate what each word means. Clarify and review any misconceptions.

Display the list at the student's eye level. Add other words as you think of them.

over  
under  
behind  
in front  
around  
between  
top  
bottom

### 2. Where Am I?

At various times throughout the day, take turns describing your own or each other's position in relation to other people or things.





### 3. Create a Positional Story

Take turns creating and acting out positional stories. For example, while telling your student a story similar to the following, have the child act out the positional words.

---

**Early one morning, Marta was lying on her bed. The house was very quiet, and she was nice and cosy under the warm covers.**

**Marta decided to get up and go downstairs for breakfast.**

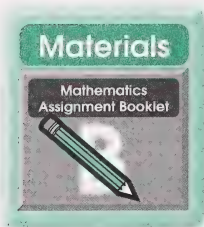
**First, she drank orange juice beside the window, and then she ate porridge in front of the table.**

**After breakfast, Marta went upstairs.**

---

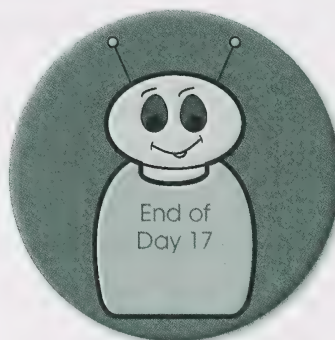


## Day 17 • Mathematics



Turn to Mathematics Assignment Booklet 5B, and follow the directions to do the assignment for Day 17.

Then complete Day 17: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning.



# Day 18



## Calendar Time

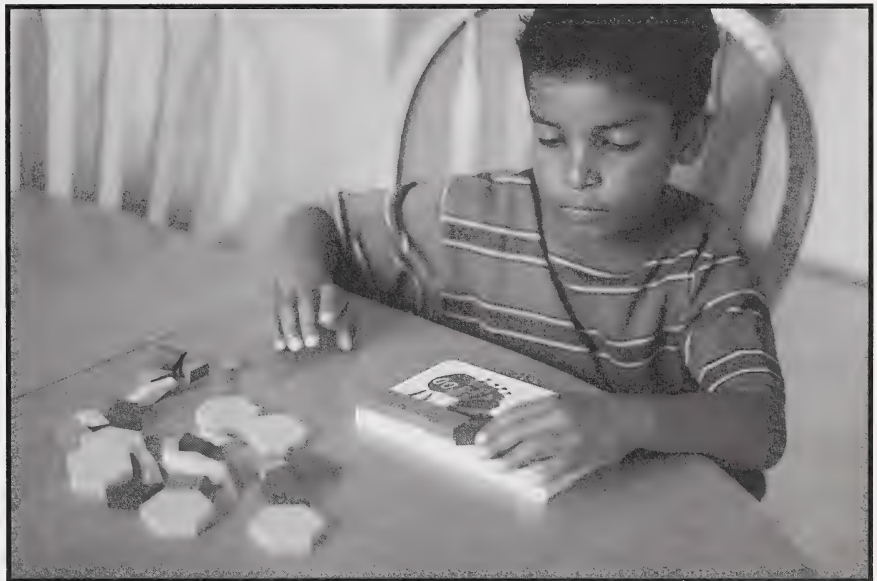
**Time recommended: 10 minutes**

Begin your lesson with the daily calendar activities and a few additional ones.

## Focus for Today

**Time recommended: 45 minutes**

- comparing sizes and shapes of figures by superimposing them



## Vocabulary (spoken only)

congruent  
superimposing  
similar  
pattern block

hexagon  
trapezoid  
diamond



## Materials Required



- box of required materials from the master list
- set of commercial Pattern Blocks (These may be purchased from the Learning Resources Distributing Centre or other sources. See the Home Instructor's Manual under Manipulatives for ordering instructions.)
- Alternatively, you could cut out pattern-block shapes from the Appendix of the Home Instructor's Manual.
- collection of small boxes of various sizes and shapes
- collection of food cans of various sizes and shapes

## Developing the Concept

Today, the student will compare sizes and shapes of figures by superimposing them.



Two shapes are said to be **congruent** when they have the same size and the same shape. Young children grasp this idea when they see that one shape can be made to fit exactly over the other. This is called **superimposing**.

Superimposing figures is one way to test for congruency.

**Similar** figures have the same shape but not necessarily the same size.

**congruent figures**



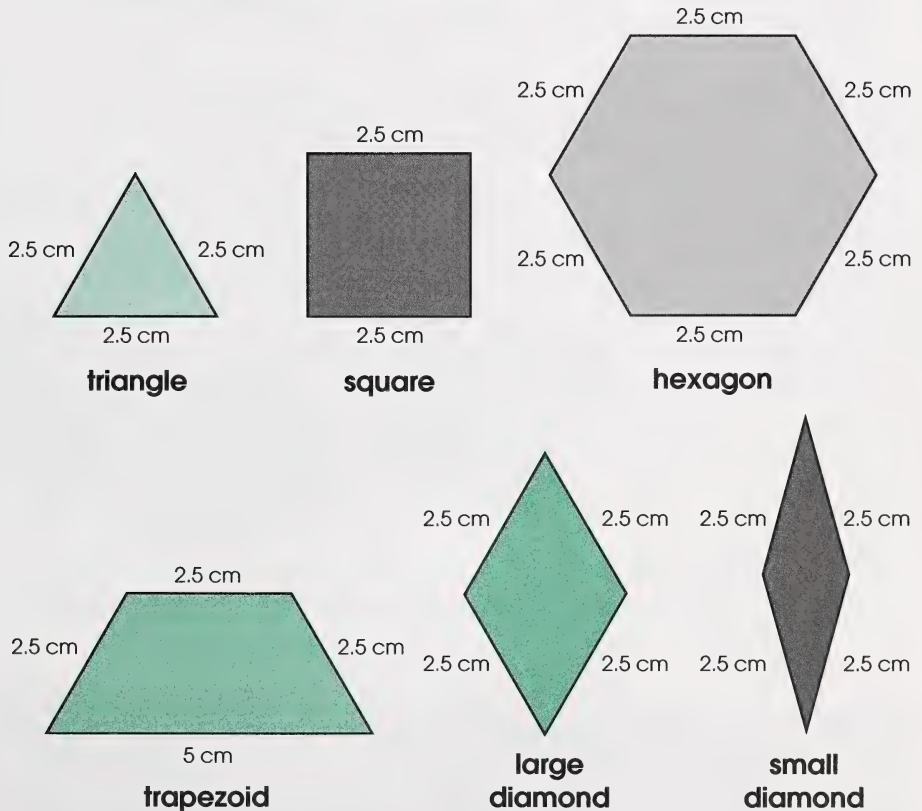
**similar figures**



If you have not purchased a set of Pattern Blocks, you could colour and cut out a set of pattern-block shapes from the Appendix of the Home Instructor's Manual. You will need the following:

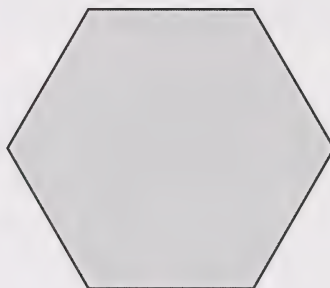
- ten green triangles
- ten orange squares
- ten yellow **hexagons**
- ten red **trapezoids**
- ten large blue **diamonds**
- ten small brown diamonds

You will find that the blocks or shapes are made according to the dimensions shown in the diagrams below.



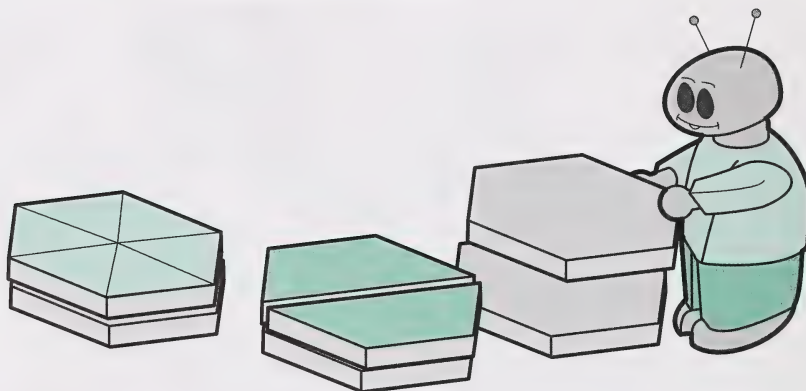
Your student should use the names **triangle**, **square**, and **diamond**, but it is not required for the student to identify by name the **hexagon** and **trapezoid**. Your student needs only to be aware of their properties and how these last two shapes relate to each other and the other basic shapes.

Place the following **pattern block** in front of your student.

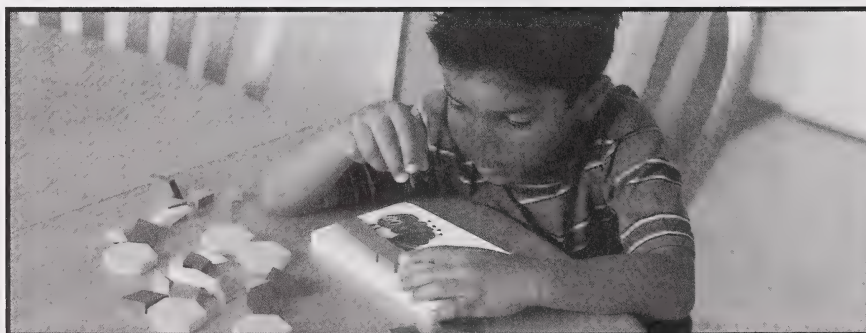


Ask the student to find another pattern block or set of pattern blocks to match the shape of this block. Suggest superimposing blocks if the student does not try this technique to find a match.

Then challenge your student to find as many different ways as possible to match the original shape.

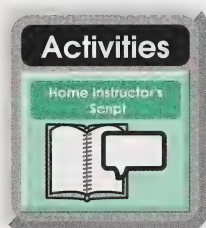
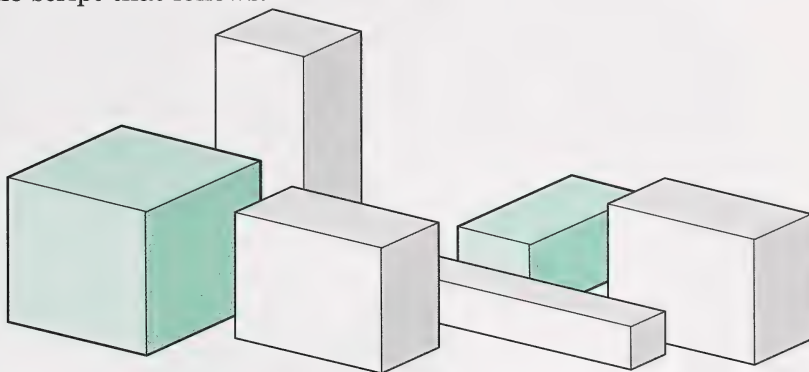


Take turns making pattern-block shapes and finding others that match.





Next, place some small boxes in front of the student. Make sure that two of the boxes have faces of matching size and shape. Use the script that follows.



Find two boxes with matching faces. Help the student as necessary.

Tell how you know the faces match. (The size and shape of one face exactly matches the size and shape of the other face.)

Place some cans in front of the student. Make sure that two of the cans have tops with matching faces. Proceed with the script.

Find two cans with tops that have matching faces.

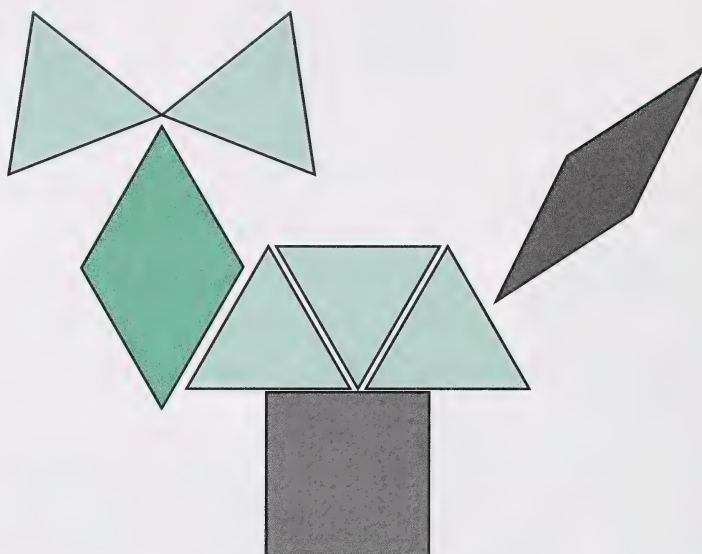
Show how you can check to see whether the tops match. Discuss how the student could place one can on top of the other or place the cans end to end.



## Applying the Concept

Use the pattern blocks to create a design or a picture, such as the one that follows. Then discuss the following.

Tell some things you notice about my picture.  
(For example, it is made from two **diamond** shapes, one square, and five triangles.)



How could you change the number of **pattern blocks** but keep the shape of the picture the same? (For example, you could use two triangles instead of one large diamond.)

How do you know the shape of the picture is the same? (The pattern blocks fit together.)

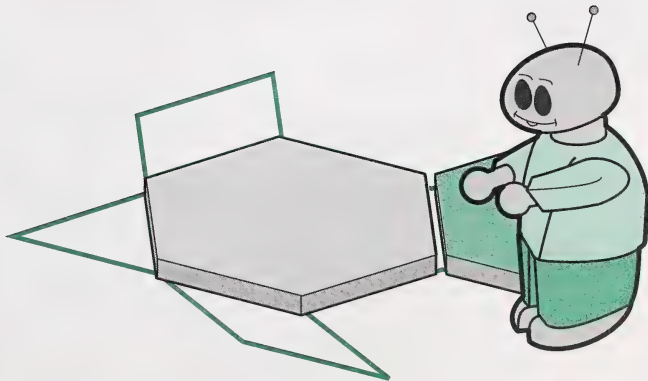
Now that you have changed the picture, have you used fewer or more blocks? (more)

### Different Shapes Make a Picture

Ask your student to look briefly at the following picture.



Then ask the student to place pattern blocks on the shape to show how the blocks can cover the shape in different ways.



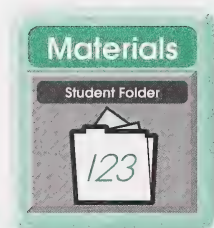


Discuss how the student can record on a chart the number of pattern blocks used. Help the student make a chart like the one that follows. Entitle it **Different Shapes Make a Picture**.

## Different Shapes Make a Picture

					
0	1	1	1	1	1

Have the student record how many of each shape were used to cover the picture on the previous page. Then challenge your student to think of two or three other ways to use the pattern blocks to make the shape of the same picture. Record how many of each shape were used for these pictures as well.



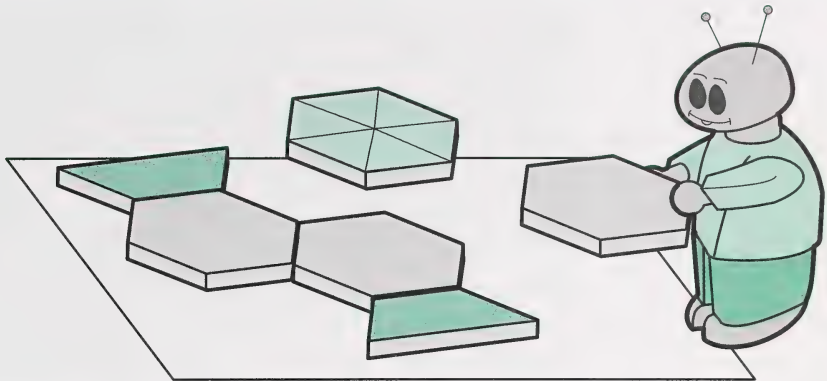
On the back of the recording sheet, have the child print the usual submission information, full name and M5D18. Place this page in the Student Folder.

## Enrichment (optional)

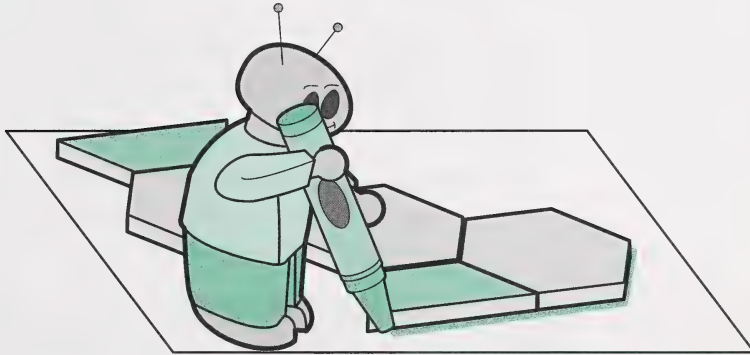
### 1. Make a Picture or Design

For this activity, you will need the collection of pattern blocks.

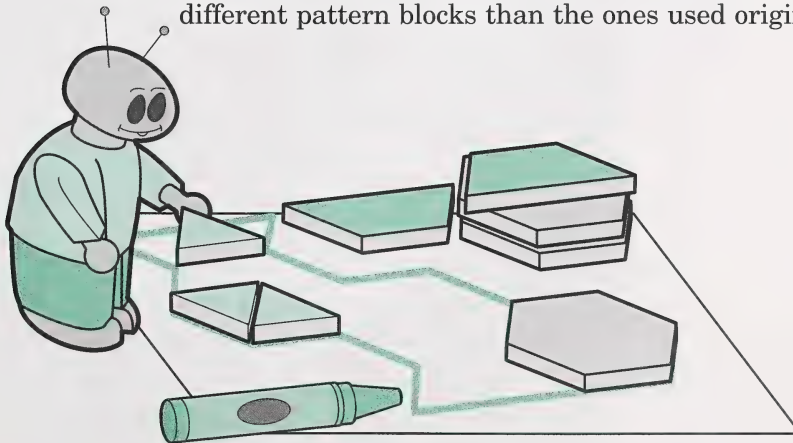
**Step 1:** Have the student use pattern blocks to make a picture or a design on a blank sheet of loose-leaf paper.



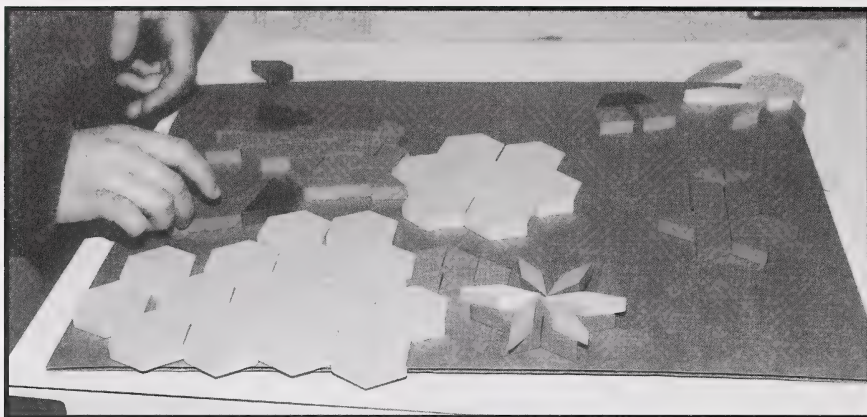
**Step 2:** Ask the student to trace around the outside of the picture or design and record the numbers and kinds of pattern blocks used.



**Step 3:** Challenge the student to cover the traced shape with different pattern blocks than the ones used originally.



**Step 4:** Let the student continue to make shape pictures or designs and then superimpose different shapes until the child gets tired of this activity.



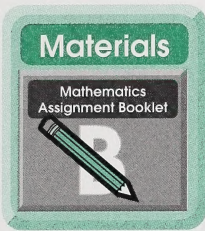
### 2. Shape Hunt

Look around your learning area or neighbourhood for shapes that have been combined to create a pattern and form a new shape.

For example, challenge your student to observe patterns in buildings, floors, walls, ceilings, roofs, brickwork, sidewalks, or anywhere else shapes are used.

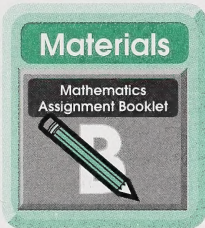






Turn to Mathematics Assignment Booklet 5B, and follow the directions to do the assignment for Day 18.

Then complete Day 18: Learning Log. Under Student's Thoughts, print a sentence or two telling what the student thinks about this day's mathematics learning, for example, what does the student think about the ability to match the sizes and shapes of figures by superimposing them?



At the end of Mathematics Assignment Booklet 5B, follow the directions to complete Day 18, Student Folder Items. Gather the required materials from your Student Folder. Submit these items to your student's teacher for marking at the time the teacher has requested them.



**Congratulations!**  
**You have completed**  
**Mathematics Module 5.**

## Credits

Some clip art drawings are commercially owned.

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EyeWire, Inc.

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